

تجميع رياضيات

فاينل 2018

بالتوفيق 

Let  $a$  be a complex number and  $f(x) = x^4 - x^2 - 12$ . If  $x - a$  is a factor of  $f(x)$  then

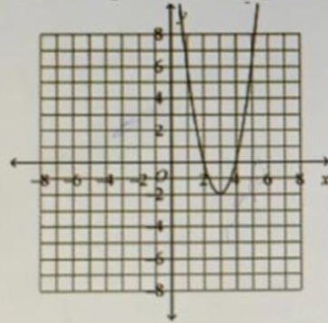
- Ⓐ  $x + a$  is a factor of  $f$  too.
- Ⓑ  $-x + a$  is a factor of  $f$  too.
- Ⓒ  $-x - a$  is a factor of  $f$  too.
- Ⓓ  $f(x + a) = 0$ .

A

Conjugate:  
 $x - a / x + a$

Question No. 22

Write the equation of this parabola in vertex form.



- $y = 2(x + 3)^2 + 2$
- $y = (x - 3)^2 - 2$
- $y = 2(x + 3)^2 - 2$
- $y = 2(x - 3)^2 - 2$

**D**

Save & Next حفظ التالي

Question No. 2

If  $x \in \mathbb{N}$ , then the value of  $i^{4x-1}$  is

- 1
- 1
- i
- i

C

Save & Next حفظ و التالي

Question No.

Factoring  $x^3 - 8y^3$  gives

- $(x - 2y)(x^2 + 2xy + 4y^2)$
- $(x + 2y)(x^2 - 2xy + 4y^2)$
- $(x - 2y)(x^2 - 2xy + y^2)$
- $x^3 - 8y^3$

**A**

$$x^3 - y^3 = (x-y)(x^2+xy+y^2)$$

$$8y^3 = (2y)^3$$

Save &amp; Next: حفظ التالي

Total questions in exam: 25 | Answered: 8

## Question No. 4

Factor:  $9 - 6cd + c^2d^2$ 

- $(3 + cd)(3 - cd)$
- $(3 + cd)(cd - 3)$
- $(3 - cd)^2$
- $(3 + cd)^2$

C

$$(x-y)^2 = x^2 - 2xy - y^2$$

Question No. 4

The supplement of the angle  $45^\circ$  is:

- $45^\circ$
- $60^\circ$
- $80^\circ$
- $135^\circ$

**D**

$$\text{supplement} = 180$$

$$180 = 45 + x$$

$$180 - 45 = x$$

$$x = 135$$

Total questions in exam: 40 | Answered: 4

## Question No. 5

Let  $f$  be the one-to-one function defined by this set of ordered pairs  $\{(-3,2), (4,5), (7,4), (10,19)\}$ .  
Then  $f^{-1}(5) =$

- 4
- 5
- $\frac{1}{5}$
- $\frac{1}{4}$

**A**

Save &amp; Next



**Question No. 18**

The function has an inverse if

- None of these answers
- doesn't satisfy the horizontal line test
- it is one-to-one
- it is quadratic

C

A

Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = -\frac{3}{2}$
- $a = \frac{3}{2}$
- $a = \frac{3}{4}$
- $a = \frac{3}{2}$

Save & Next

D

Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- {2, 4, 3}
- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

**B**

Save & Next

Question No. 7

The horizontal asymptote to the graph of  $f(x) = 2^x - 3$ .

- $y = -3$
- $x = -2$
- $y = 3$
- $x = 2$

A

Save & Next حفظ والتالي

Question No. 3

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x^3 + x^2 - 1}{x^2 - x - 1} =$

- 1
- 0
- $-\infty$
- 1

C

Question No. .

If  $x-4$  is a factor of the polynomial  $f(x)$  then

- $f(-4) = 0$
- $f(0) = 4$
- $f(4) = 0$
- $f(0) = -4$

C

سؤال التالي

Question No. 6

Evaluate  $\lim_{x \rightarrow \infty} (x^3 + x - 3) =$

- 0
- 3
- 3
- $\infty$

D

Question No. 33

The function  $f(x) = \begin{cases} kx - k & \text{if } x \geq 3 \\ 4 & \text{if } x < 3 \end{cases}$  is continuous if

$k = 2$

$k = 3$

$k = \frac{4}{3}$

$k = 1$

A



If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

D

Next

Question No. 18

The function  $f(x) = -2x^2 + 4x + 1$  is equivalent to

- $f(x) = -2(x - 1)^2 - 3$
- $f(x) = -2(x - 1)^2 + 3$
- $f(x) = 2(x - 1)^2 + 3$
- $f(x) = -2(x + 1)^2 + 3$

**B**

Question No. 6

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x+5}{2x+3} =$

- $\infty$
- 0
- $\frac{1}{2}$
- $\frac{5}{3}$

C

Save & Next

Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- {2, 4, 3}
- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

B

Save & Next

Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

**D**

Next

## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = \frac{1}{3}$
- $a = -\frac{1}{3}$
- $a = \frac{2}{3}$
- $a = -\frac{2}{3}$

**D**

Save &amp; Next

Question No. 33

if  $f(x) = \begin{cases} \frac{x^2-1}{x-1} & \forall x \neq 1 \\ 1 & \forall x = 1 \end{cases}$  then  $\lim_{x \rightarrow 1} f(x)$  is

- 2
- 2
- 1
- 3

B?

Question No. 7

The horizontal asymptote to the graph of  $f(x) = 2^x - 3$ .

- $y = -3$
- $x = -2$
- $y = 3$
- $x = 2$

A

حفظ و التالي Save & Next



If  $x-4$  is a factor of the polynomial  $f(x)$  then

- $f(-4) = 0$
- $f(0) = 4$
- $f(4) = 0$
- $f(0) = -4$

C

Total questions in exam: 40 | Answered: 4

## Question No. 5

Let  $f$  be the one-to-one function defined by this set of ordered pairs  $\{(-3,2), (4,5), (7,4), (10,19)\}$ .  
Then  $f^{-1}(5) =$

- 4
- 5
- $\frac{1}{5}$
- $\frac{1}{4}$

A

Save &amp; Next

Question No. 6

Evaluate  $\lim_{x \rightarrow \infty} (x^3 + x - 3) =$

- 0
- 3
- 3
- $\infty$

D

D

Question No. 3

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x^3 + x^2 - 1}{x^2 - x - 1} =$

- 1
- 0
- $-\infty$
- 1

C

Question No. 3

If  $x-4$  is a factor of the polynomial  $f(x)$  then

- $f(-4) = 0$
- $f(0) = 4$
- $f(4) = 0$
- $f(0) = -4$

& Next

C

Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

D

## Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- (2, 4, 3)
- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

B

B

Save & Next

Total questions in exam: 40 | Answered: 4

Question No. 5

Let  $f$  be the one-to-one function defined by this set of ordered pairs  $\{(-3,2), (4,5), (7,4), (10,19)\}$ .  
Then  $f^{-1}(5) =$

- 4
- 5
- $\frac{1}{5}$
- $\frac{1}{4}$

A

A

Save &amp; Next



## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = -\frac{3}{2}$
- $a = -\frac{3}{4}$
- $a = \frac{3}{2}$
- $a = \frac{3}{4}$

D

Save & Next

Question No. 20

Given that  $f(x) = 6x^3 + x^2 + 5x - 12$ , then one of the following is a factor of  $f(x)$

- x - 2
- x + 2
- x + 1
- x - 1

C

Save & Next

D  
X-1

The inverse of  $f(x) = \frac{\sqrt[3]{x} - 5}{2}$  is

$f^{-1}(x) = (2x + 5)$

$f^{-1}(x) = \frac{1}{3}(2x + 5)$

$f^{-1}(x) = 3(2x + 5)$

$f^{-1}(x) = (2x + 5)^3$

**D**

**D**

$$x = (3\sqrt[3]{y} - 5) / 2$$

$$2x = 3\sqrt[3]{y} - 5$$

$$2x + 5 = 3\sqrt[3]{y}$$

$$(2x + 5)^3 = y$$

Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

**D**

Range of  $1 - \sqrt{x+2} = (-\infty, 1]$   
domain of  $f^{-1}(x)$  is range of  $f(x)$

Next

If  $p(x) = \sqrt{x+3}$  and  $q(x) = \sqrt{x-4}$ . Determine the domain of  $(p \cdot q)(x)$ .

- $x \in (-\infty, -3) \cup (4, \infty)$
- $x \in [-3, 4]$
- $x \in [4, \infty)$
- $x \in (-3, 4)$

C

Question No. 6

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x+5}{2x+3} =$

- $\infty$
- 0
- $\frac{1}{2}$
- $\frac{5}{3}$

C

Save & Next

## Question No. 2

Let  $a \in \mathbb{R}$ . Give the value of  $a$  such that the point  $(a, a)$  belongs to the line  $ax + 4y = -4$ .

- a = 2
- a = 1
- a = -1
- a = -2

D: -2

$$(x, y) = (a, a)$$

$$a(a) + 4a = -4$$

$$a^2 + 4a + 4 = 0$$

$$\text{Mode: } 5, 3$$

$$a = -2$$

Question No. 20

Given that  $f(x) = 6x^3 + x^2 + 5x - 12$ , then one of the following is a factor of  $f(x)$

- $x - 2$
- $x + 2$
- $x + 1$
- $x - 1$

C  
 $x-1$

Save & Next ⏩



The inverse of  $f(x) = \frac{\sqrt[3]{x} - 5}{2}$  is

- $f^{-1}(x) = (2x + 5)$
- $f^{-1}(x) = \frac{1}{3}(2x + 5)$
- $f^{-1}(x) = 3(2x + 5)$
- $f^{-1}(x) = (2x + 5)^3$

**D****D**

## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = -\frac{3}{2}$
- $a = -\frac{1}{2}$
- $a = \frac{3}{2}$
- $a = \frac{1}{2}$

D

Save & Next

Question No. 3

If  $x-4$  is a factor of the polynomial  $f(x)$  then

- $f(-4) = 0$
- $f(0) = 4$
- $f(4) = 0$
- $f(0) = -4$

C

Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

**D**

Next question

## Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- {2, 4, 3}
- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

B

B

Save & Next

Question No. 3

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x^3 + x^2 - 1}{x^2 - x - 1} =$

- 1
- 0
- $-\infty$
- 1

C

C

If  $x-4$  is a factor of the polynomial  $f(x)$  then

- $f(-4) = 0$
- $f(0) = 4$
- $f(4) = 0$
- $f(0) = -4$

C

Question No 7

The horizontal asymptote to the graph of  $f(x) = 2^x - 3$ .

- $y = -3$
- $x = -2$
- $y = 3$
- $x = 2$

A

Save & Next حفظ والتالي



## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = -\frac{3}{2}$
- $a = -\frac{1}{2}$
- $a = \frac{3}{2}$
- $a = \frac{1}{2}$

D

Save & Next

Question No. 33

if  $f(x) = \begin{cases} \frac{x^2-1}{x-1} & \text{if } x \neq 1 \\ 1 & \text{if } x = 1 \end{cases}$  then  $\lim_{x \rightarrow 1} f(x)$  is

- 2
- 2
- 1
- 3

**B**

Question No. 18

The function  $f(x) = -2x^2 + 4x + 1$  is equivalent to

- $f(x) = -2(x-1)^2 - 3$
- $f(x) = -2(x-1)^2 + 3$
- $f(x) = 2(x-1)^2 + 3$
- $f(x) = -2(x+1)^2 + 3$

**B**

Question No. 33

The function  $f(x) = \begin{cases} kx - k & \text{if } x \geq 3 \\ 4 & \text{if } x < 3 \end{cases}$  is continuous if

$k = 2$

$k = 3$

$k = \frac{4}{3}$

$k = 1$

**A**

$$kx - k = 4$$

$$k(3) - k = 4$$

$$k(3-1) = 4$$

$$2k = 4, k = 2$$

Question No. 6

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x+5}{2x+3} =$

$\infty$

0

$\frac{1}{2}$

$\frac{5}{3}$

C

$$x/2x = 1/2$$

Save & Next

Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$

**D**

Next

Qu

Let  $a$  be an integer. Give all values of  $a$  such that the function  $F$  is a one-to-one function

$$F = \{(7, -1), (5, 1 - a), (0, 5), (-2, a), (1, 3)\}$$

- $a \in \mathbb{R} \setminus \{-1, 5, 3, 2\}$
- $a \in \mathbb{R} \setminus \{-1, 5, 3, 2, -4, -2\}$
- $a \in \mathbb{R} \setminus \{5, 3, 2\}$
- $a \in \{1, 5, -2\}$

**B**

$a$  should be all real numbers EXCEPT numbers that give you  $y$  for any point

Question No. 2

Evaluate  $\lim_{x \rightarrow 1} (x^2 + x - 6) =$

- 4
- 4
- 0
- 6

A

If  $x \rightarrow 1$

Save & Next حفظ و التالي



If  $p(x) = \sqrt{x+3}$  and  $q(x) = \sqrt{x-4}$ . Determine the domain of  $(p \cdot q)(x)$ .

- $x \in (-\infty, -3) \cup (4, \infty)$
- $x \in [-3, 4]$
- $x \in [4, \infty)$
- $x \in (-3, 4)$

C

Let  $a \in \mathbb{R}$  and  $f(x) = \log_{a-2}(x+1) - a$ . Give the condition on  $a$  such that  $f(x)$  is increasing.

- $a \in [3, \infty)$
- $a \in (3, \infty)$
- $a \in (-\infty, 3)$
- $a \in (1, 3)$

# B

$$\log_{a-2}(x+1) = a$$

$$x+1 = (a-2)^a$$

$a-2$  must be greater than 1 to be increasing

$$a > 3$$

The solution set of the equation  $3(x + 3) = 3x - 9$  is

- the set of real numbers
- $\{2,3\}$
- 1
- $\emptyset$

**D**

$$\begin{aligned}3(x+3) &= 3x - 9 \\3x + 9 &= 3x - 9 \\3x - 3x &= -9 - 9 \\0 &= 18 (\emptyset)\end{aligned}$$

Question No. 22

The function  $f(x) = \begin{cases} x^4 & \text{if } x \leq 1 \\ k - x^4 & \text{if } x > 1 \end{cases}$  is continuous if

- k=-1
- k=1
- k=0
- k=2

**D**

$$x = 1$$

$$1^4 = k - 1^4$$

$$1 = k - 1$$

$$k = 2$$

Question No. 17

The domain of the function  $f(x) = e^{x^2-3x+1} - 2$  is:

- $\mathbb{R}$
- $(0, \infty)$
- $(-1, \infty)$
- $(-\infty, 0)$

**A**

Question No. 13

Use the square root property to solve this quadratic equation

$$x^2 + 20 = 4$$

- $\pm 4i$
- $\sqrt{16}$
- $-4$
- $\pm\sqrt{24}$

A

$$x^2 + 20 - 4 = 0$$

$$x^2 + 16 = 0$$

Mode 5,3

حفظ والتالي Save & Next

Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- {2, 4, 3}
- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

**B**

Save & Next

## Question No. 2

The solution of the equation  $2^x = 3^{2x-1}$  is

- $\frac{\ln 2}{2 \ln 3 - \ln 2}$   
  $\frac{\ln 2}{\ln 2 - 2 \ln 3}$   
  $\frac{\ln 3}{\ln 2 - 2 \ln 3}$   
  $\frac{\ln 3}{2 \ln 3 - \ln 2}$

# D

$$\begin{aligned}
 \ln 2^x &= \ln 3^{2x-1} \\
 x \ln 2 &= (2x-1) \ln 3 \\
 x \ln 2 &= 2x \ln 3 - \ln 3 \\
 2x \ln 3 - x \ln 2 &= \ln 3 \\
 x (2 \ln 3 - \ln 2) &= \ln 3 \\
 x &= \ln 3 / (2 \ln 3 - \ln 2)
 \end{aligned}$$

Save & Next حفظ والتالي



The product  $z(1+i)$  is a real number if

- $z \in \mathbb{R}$ .
- $z$  is the complex conjugate of  $1+i$ .
- $z$  is a pure imaginary number.
- $z = i$ .


**B**conjugate =  $1-i$

Total questions in exam: 40 | Answered: 4

## Question No. 5

Let  $f$  be the one-to-one function defined by this set of ordered pairs  $\{(-3,2), (4,5), (7,4), (10,19)\}$ .  
Then  $f^{-1}(5) =$

- 4
- 5
- $\frac{1}{5}$
- $\frac{1}{4}$

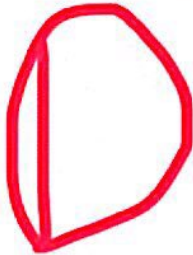


Save &amp; Next

## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = \frac{3}{2}$
- $a = \frac{3}{4}$
- $a = \frac{3}{8}$
- $a = \frac{3}{16}$



Save &amp; Next

Ques:

If  $f(x)$  is a polynomial such that  $f(5) = -7$  then the remainder of the  $f(x) \div (x - 5)$  equals:

- 5
- 5
- 7
- 7

D: -7

Question No. 6

Evaluate  $\lim_{x \rightarrow \infty} (x^3 + x - 3) =$

- 0
- 3
- 3
- $\infty$

0

D

## Question No. 22

The function  $f(x) = \begin{cases} x^4 & \text{if } x \leq 1 \\ k - x^4 & \text{if } x > 1 \end{cases}$  is continuous if

- k=-1
- k=1
- k=0
- k=2

D

Question No. 8

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

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- {1, 2, 3, 5, 7}
- {4, 6}
- {1, 2, 3, 4}

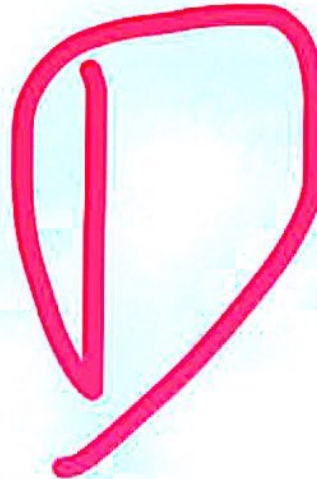
**B**

Save & Next

Question No. 5

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, \infty)$
- $(-\infty, 1]$



**D**



Question No. 2

Evaluate  $\lim_{x \rightarrow -1} (x^2 + x - 6) =$

- 4
- 4
- 0
- 6

A

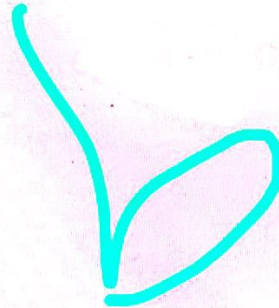
A

Save & Next حفظ والتالي

Question No. 16

Evaluate  $\lim_{x \rightarrow -3} \frac{x^2 + 7x + 12}{x + 3} =$

- 4
- 1
- 3
- 0



**B**

$$\begin{aligned}x^2 + 7x + 12 &= (x+3)(x+4) \\ \frac{(x+3)(x+4)}{x+3} \\ x + 4 &= -3 + 4 = 1\end{aligned}$$

Question No. 17

The domain of the function  $f(x) = e^{x^2-3x+1} - 2$  is:

- $\mathbb{R}$
- $(0, \infty)$
- $(-1, \infty)$
- $(-\infty, 0)$

A

A

Exam: 40 | Answered: 0

No. 26

$x \in \mathbb{R}$  and  $z$  be a complex number. Give the value of  $x$  that makes  $z$  a pure imaginary number.

$$z = (3x - \sqrt{5}) + (x + 1)i - 2$$

- $x = \frac{2 - \sqrt{5}}{3}$
- $x = -\frac{\sqrt{5}}{3}$
- $x = \frac{2 + \sqrt{5}}{3}$
- $x = \frac{\sqrt{5}}{3}$



$a+bi$  , pure imaginary number  $a = 0$

$$z = a + bi - 2$$

$$2 = a + bi .$$

$$2 = a \text{ (meaning } a=0)$$

$$2 = 3x - \sqrt{5} , 2 + \sqrt{5} = 3x$$

$$x = (2 + \sqrt{5}) / 3$$

Question No. 2

Evaluate  $\lim_{x \rightarrow 1} (x^2 + x - 6) =$

- 4
- 4
- 0
- 6

A

Save & Next حفظ التالي

HP Compaq LE1711

Let  $f(x) = -\frac{3}{2}x + 4$ , find the value of  $a$  such that  $f(2a) = 7$ .

- a = 0.
- a = 1.
- a = -1.
- a = 2.

C

$$-\frac{3}{2}x + 4 = 7$$

$$-\frac{3}{2}(2a) + 4 = 7$$

$$-\frac{3}{2}(2a) = 3$$

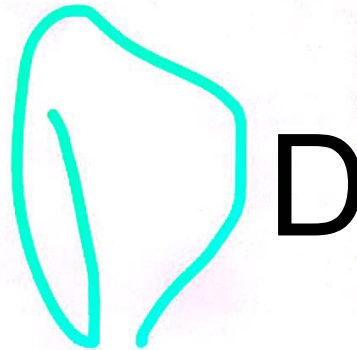
$$2a = -\frac{6}{3}, 2a = -2$$

$$a = -1$$

Save & Next حفظ و التالي

The function  $f(x) = \begin{cases} x^4 & \text{if } x \leq 1 \\ k - x^4 & \text{if } x > 1 \end{cases}$  is continuous if

- k=-1
- k=1
- k=0
- k=2



## Question No. 1

Perform the indicated operations  $a b(a^{-1} - b^{-1})$ , where  $a \neq 0$ ,  $b \neq 0$

- $b - a$   
  $\frac{1}{b} - \frac{1}{a}$   
 0  
  $a - b$

**A**

$$ab \left( \frac{1}{a} - \frac{1}{b} \right)$$

توحيد المقامات

$$ab \left( \frac{b-a}{ab} \right)$$

$$b - a \text{ (ab is deleted with ab)}$$

حفظ التالي Save & Next



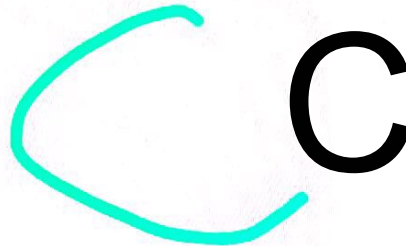
The product  $z(1+i)$  is a real number if

- $z \in \mathbb{R}$ .
- $z$  is the complex conjugate of  $1+i$ .
- $z$  is a pure imaginary number.
- $z = i$ .

**B**

The graph of  $f(x) = -3x^2 + x + 4$  is

- Open left
- Open right
- Open down
- Open up



$ax^2$  , if  $a > 0$  then open up  
if  $a < 0$  then open down

Question No. 17

The domain of the function  $f(x) = e^{x^2-3x+1} - 2$  is:

- $\mathbb{R}$
- $(0, \infty)$
- $(-1, \infty)$
- $(-\infty, 0)$

**A**

Use the square root property to solve this quadratic equation

$$x^2 + 20 = 4$$

- $\pm 4i$
- $\sqrt{16}$
- $-4$
- $\pm\sqrt{24}$

A

حفظ والتالي Save & Next

Question No. 2

The solution of the equation  $2^x = 3^{2x-1}$  is

- $\frac{\ln 2}{2 \ln 3 - \ln 2}$
- $\frac{\ln 2}{\ln 2 - 2 \ln 3}$
- $\frac{\ln 3}{\ln 2 - 2 \ln 3}$
- $\frac{\ln 3}{2 \ln 3 - \ln 2}$

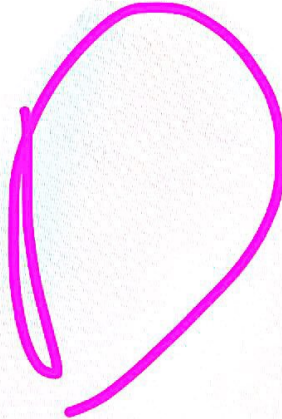
D

Save & Next حفظ و التالي

Question No. 25

Given that  $f(x) = \log_{\frac{1}{2}}(x+2)$ , then  $f(2) =$ 

- $\frac{1}{4}$
- $\frac{1}{2}$
- 2
- 2

**D**

$$F(x) = \log_{1/2} (x+2)$$

$$F(2) = \log_{1/2} (2+2)$$

$$F(2) = \log_{1/2} (4)$$

$$\text{By calculator } f(2) = -2$$

Question No. 12

Let  $a$  be an integer. Give all values of  $a$  such that the function  $F$  is a one-to-one function

$$F = \{(7, -1), (5, 1 - a), (0, 5), (-2, a), (1, 3)\}$$

- $a \in \mathbb{R} \setminus \{-1, 5, 3, 2\}$
- $a \in \mathbb{R} \setminus \{-1, 5, 3, 2, -4, -2\}$
- $a \in \mathbb{R} \setminus \{5, 3, 2\}$
- $a \in \{1, 5, -2\}$

**B**

Question No. 7

The degree of the polynomial  $5x^2 + 3x - 52$  is

- 5
- 3
- 2
- 52

C



## Question No. 24

Let  $x \in \mathbb{Z}$ . Simplify the following expression  $a = 3i^{132x^2+4x-3}$

- $a = 3i$
- $a = -3i$
- $a = -3$
- $a = 3$

A

Save & Next. حفظ و التالي

Question No. 11

Factor :  $5x^2 - tx^2 - 5z + tz$

- $(x^2 - z)(5 - t)$
- $(x^2 - z)(5 + t)$
- $(x^2 + z)(5 + t)$
- $(x^2 + z)(5 - t)$

A

A

$$\begin{aligned}5x^2 - tx^2 &= x^2 (5-t) \\ -5z + tz &= -z (5-t) \\ \text{then } &(x^2 - z) (5-t)\end{aligned}$$

Question No. 15

The graph of  $f(x) = -3x^2 + x + 4$  is

- Open left
- Open right
- Open down
- Open up

C C

Save & Next حفظ والتالي

Question No. 8

Evaluate  $\lim_{x \rightarrow -1} \frac{3x^4 + x + 1}{x + 4} =$

- 4
- 3
- 1
- 0

C

$$\frac{3(-1)^4 + (-1) + 1}{-1 + 4}$$
$$\frac{3}{3} = 1$$

The solution set of the equation  $3(x + 3) = 3x - 9$  is

- {2,3}
- 1
- the set of real numbers
- $\emptyset$

D

Save & Next حفظ و التالي

Question No. 6

Simplify  $(x^{\frac{1}{2}} - 3)(x^{\frac{1}{2}} + 3)$

- $x - 9$
- $x + 9$
- $x - 3$
- $x + 3$

**A**

## Question No. 18

Which of the following is a pair of inverse functions?

- $f(x) = 2x - 1$ , where  $x \in \mathbb{R}$ , and  $g(x) = x + \frac{1}{2}$ , where  $x \in \mathbb{R}$ .  
  $f(x) = \sqrt{3+x}$ , where  $x \in [-3, \infty)$ , and  $g(x) = x^2 - 3$ , where  $x \in [0, \infty)$ .  
  $f(x) = x$ , where  $x \in \mathbb{R}$ , and  $g(x) = -x$ , where  $x \in \mathbb{R}$ .  
  $f(x) = \sqrt{3+x}$ , where  $x \in [-3, \infty)$ , and  $g(x) = x^2 + 3$ , where  $x \in [0, \infty)$ .

$$\begin{aligned}
 x &= \sqrt{3+y} \\
 x^2 &= 3+y \\
 x^2 - 3 &= y
 \end{aligned}$$

 Save & Next حفظ التالي

$$\begin{aligned}
 x &= y^2 - 3 \\
 x+3 &= y^2 \\
 \sqrt{x+3} &= y \text{ or} \\
 \sqrt{3+x} &= y
 \end{aligned}$$

## Question No. 7

Let  $a \in \mathbb{R}$  and  $f(x) = \log_{a-2}(x+1) - a$ . Give the condition on  $a$  such that  $f(x)$  is increasing.

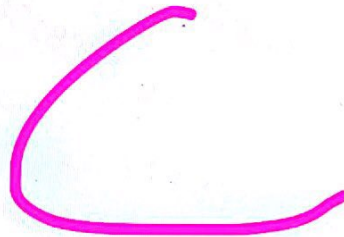
- $a \in [3, \infty)$
- $a \in (3, \infty)$
- $a \in (-\infty, 3)$
- $a \in (1, 3)$



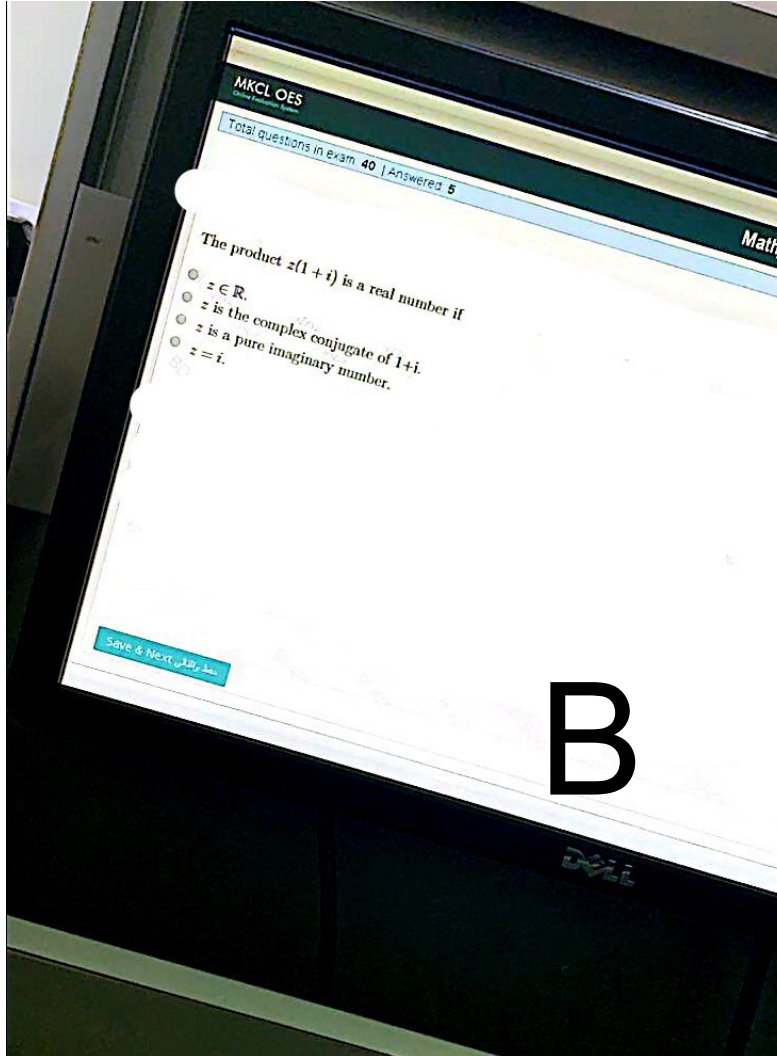


The function has an inverse if

- None of these answers
- doesn't satisfy the horizontal line test
- it is one-to-one
- it is quadratic



C



Question No. 24

If  $x-2$  is a factor of the polynomial  $f(x)$  then

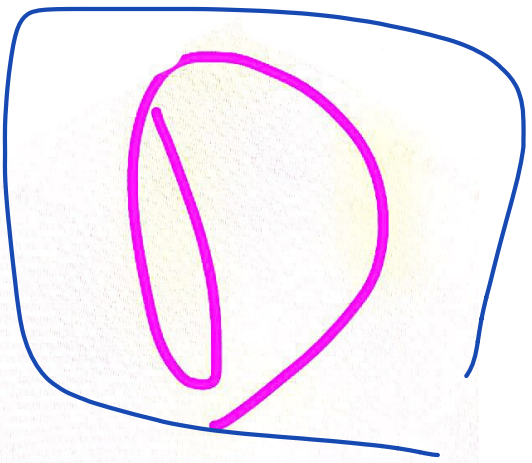
- $f(-2) = 0$
- $f(2) = 0$
- $f(0) = -2$
- $f(0) = 2$

B

Question No. 25

Given that  $f(x) = \log_{\frac{1}{2}}(x + 2)$ , then  $f(2) =$

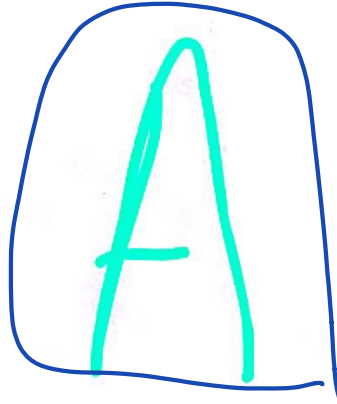
- $\frac{1}{4}$
- $\frac{1}{2}$
- 2
- 2



Question No. 6

Simplify  $(x^{\frac{1}{2}} - 3)(x^{\frac{1}{2}} + 3)$

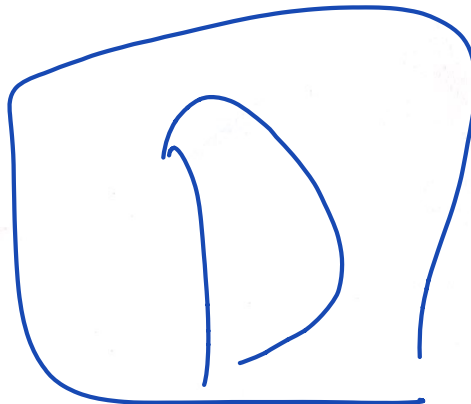
- $x - 9$
- $x + 9$
- $x - 3$
- $x + 3$



## Question No. 2\*

The function  $f(x) = \begin{cases} x^4 & \text{if } x \leq 1 \\ k - x^4 & \text{if } x > 1 \end{cases}$  is continuous if

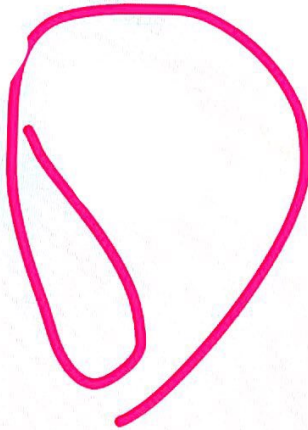
- k=-1
- k=1
- k=0
- k=2



Question No. 23

Evaluate  $\lim_{x \rightarrow -3} \frac{|x+3|}{x+3}$

- 0
- 2
- 1
- Does not exist



Total questions in exam: 40 | Answered: 0

## Question No. 33

Give the slope of the line  $4y - 8x + 28 = 0$ 

- 2
- 7
- 2
- 7

$$\text{Slope} = -\frac{A}{B} = \frac{-(-8)}{4} = \boxed{2}$$

Save & Next حفظ و التالي



No. 26

$x \in \mathbb{R}$  and  $z$  be a complex number. Give the value of  $x$  that makes  $z$  a pure imaginary number.

$$z = (3x - \sqrt{5}) + (x + 1)i - 2$$

- $x = \frac{2 - \sqrt{5}}{4}$
- $x = -\frac{\sqrt{5}}{3}$
- $x = \frac{2 + \sqrt{5}}{4}$
- $x = \frac{\sqrt{5}}{3}$

## Question No. 2

Suppose  $a \in \mathbb{R}$ . Give the value of  $a$  such that the equation  $|2x + 3| = |x + a|$  has one solution.

- $a = -\frac{3}{2}$
- $a = -\frac{1}{2}$
- $a = \frac{3}{2}$
- $a = \frac{1}{2}$

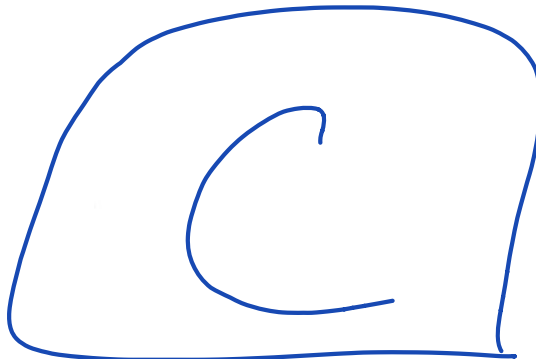


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Question No. 35

If a function  $f(x)$  has an inverse function and  $f(-2) = 11$ , then

- $f^{-1}(11) = -2$
- $f^{-1}(2) = -11$
- $f^{-1}(11) = -1$
- $f^{-1}(2) = -11$

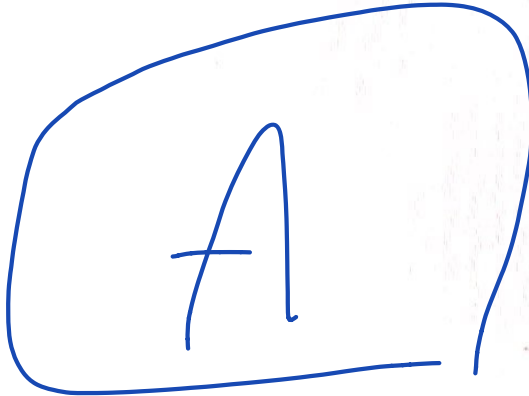


Total questions in exam 40 | Answered 0

Question No. 32

The solution set of the equation  $2 \log_2 x - \log_2(4x + 5) = 0$  is

- (5)
- {-1.5}
- 0
- {-1}

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Total questions in exam 40 | Answered 0

## Question No. 36

The solution set of the equation  $(\sqrt{2})^{3-5x} = 4^{a+x}$  is

- $\{\frac{1}{2} - \frac{1}{6}a\}$
- $\{\frac{3}{2} - \frac{2}{7}a\}$
- $\{\frac{1}{3} - \frac{1}{5}a\}$
- $\{3 + \frac{1}{4}a\}$

$$(\sqrt{2})^{3-5x} = (\sqrt{2})^{4a+4x}$$

$$3 - 5x = 4a + 4x$$

$$-5x - 4x = 4a - 3$$

$$-9x = 4a - 3$$

$$x = \frac{4a - 3}{-9}$$

$$= \boxed{\frac{1}{3} - \frac{4}{9}a}$$

Total questions in exam: 40 | Answered: 0

## Question No. 37

If  $\sin \theta = \frac{4}{5}$  then  $\cos \theta =$  \_\_\_\_\_, where  $0^\circ < \theta < 90^\circ$ 

- $\frac{4}{5}$
- $\frac{3}{5}$
- $\frac{5}{4}$
- $\frac{5}{3}$

$$\textcircled{1} \sin^2 \theta + \cos^2 \theta = 1$$

$$\cos \theta = \sqrt{1 - \sin^2 \theta}$$

$$\cos \theta = \sqrt{1 - \frac{16}{25}}$$

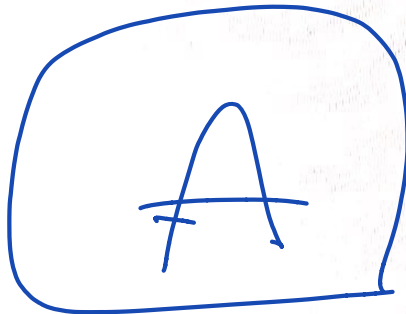
$$\cos \theta = \boxed{\frac{3}{5}} \rightarrow \boxed{B}$$

Total questions in exam: 40 | Answered: 0

Question No. 35

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x^3 + x^2 - 1}{x^2 - x - 1} =$

- $-\infty$
- 0
- 1
- 1



Save &amp; Next

Total questions in exam: 40 | Answered: 0

Question No. 34

Evaluate  $\lim_{x \rightarrow 1} \frac{x^2 - 1}{|x - 1|}$ 

- 2  
 6  
 -2  
 1

$$\frac{\cancel{(x-1)}(x+1)}{\cancel{x-1}} = x+1$$
$$= 1+1$$
$$= 2$$

A

Save & Next حفظ و التالي



Total questions in exam: 40 | Answered: 0

## Question No. 38

The solution set of the equation  $\log_2 x + \log_2(2x - 1) = 2 \log_2(2 - x)$  is

- {1, -4}  
 {1}  
 {4, -1}  
  $\emptyset$

$$\log_2 x \cdot (2x - 1) = \log_2 (2 - x)^2$$

$$\begin{array}{r} 2x^2 - x \\ -x^2 \end{array} = \begin{array}{r} 4 - 4x + x^2 \\ -x^2 \end{array}$$

$$x^2 = 4 - 4x + x$$

$$x^2 = 4 - 3x$$

$$x^2 + 3x - 4 = 0$$

$$x = 1, x = -4$$

**A**

Total questions in exam: 40 | Answered: 0

Question No. 31

Evaluate  $\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9} =$ 

- $-\frac{1}{4}$
- $-\frac{1}{6}$
- $\frac{1}{2}$
- $\frac{1}{6}$

D

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Total questions in exam: 40 | Answered: 0

Question No. 30

Solve  $1 < 7 - x < 10$ 

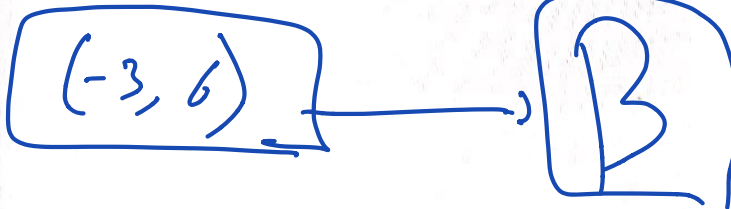
- (-6, -3)  
 (-3, 6)  
 (-6, 3)  
 (3, 6)

$$1 < 7 - x < 10$$

-7    -7                    -7

$$-6 < -x < 3$$

$$6 > x > -3$$



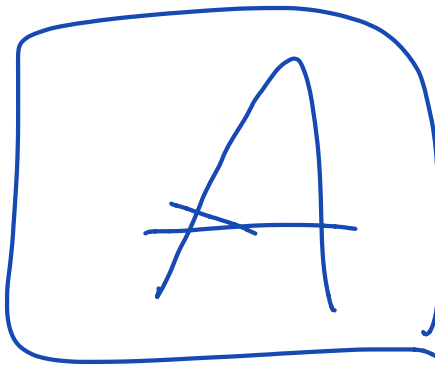
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Total questions in exam: 40 | Answered: 0

## Question No. 40

The graph of  $f(x) = 3^x$  is

- Increasing
- Constant
- Decreasing and Increasing
- Decreasing



Save &amp; Next 18/16

Total questions in exam: 40 | Answered: 0

## Question No. 39

The supplement of the angle  $50^\circ$  is:

- $50^\circ$
- $150^\circ$
- $130^\circ$
- $40^\circ$

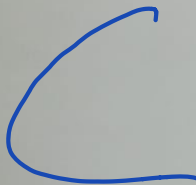


Save &amp; Next

## Question No. 28

If  $\theta = 90^\circ$  then  $\theta$  is called

- an obtuse angle
- a straight angle
- a right angle
- an acute angle



Total questions in exam: 40 | Answered: 0

## Question No. 23

Evaluate:  $|-12 + (5 - 2)|$ 

- 9
- 6
- 3
- 4

A

Save & Next حفظ و التالي

Question No. 27

Evaluate  $\lim_{x \rightarrow -1} (x^3 + x - 6) =$

- 4
- 4
- 0
- 6

B

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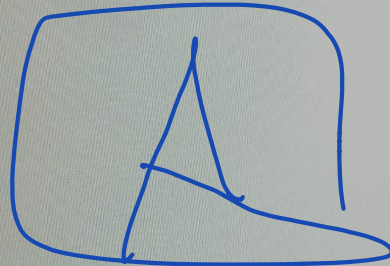


Total questions in exam: 40 | Answered: 0

## Question No. 22

Let  $x \in \mathbb{Z}$ . Simplify the following expression  $a = 3i^{132x^2+4x-3}$ 

- $a = 3i$
- $a = -3i$
- $a = 3$
- $a = -3$

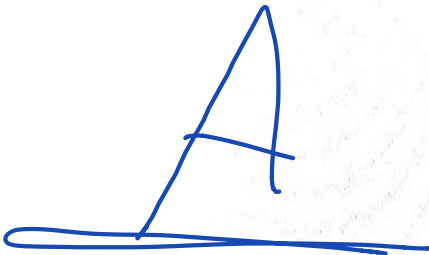


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## Question No. 21

The function  $f(x) = \begin{cases} kx - k & \text{if } x \geq 3 \\ 4 & \text{if } x < 3 \end{cases}$  is continuous if

- $k = 2$
- $k = 1$
- $k = 3$
- $k = \frac{4}{3}$



Save & Next حفظ و التالي

Total questions in exam: 40 | Answered: 0

## Question No. 25

Find the quotient  $\frac{6x^2}{2x^5} \div \frac{3x}{x^4}$ , where  $x \neq 0$ 

- $\frac{1}{3}$
- 1
- $\frac{1}{2}$
- 1

$$\frac{\overset{2}{\cancel{6}x^{\cancel{2}}}}{\underset{1}{\cancel{2}x^{\cancel{5}}}} \cdot \frac{\overset{\cancel{x^4}}{\cancel{3}x}}{\underset{1}{\cancel{3}x}} = \frac{2x}{2x} = \boxed{1} \downarrow \boxed{B}$$

Save &amp; Next

Total questions in exam: 40 | Answered: 0

## Question No. 24

The equation  $y = \log_2(3x)$  can be written as

- $x = \frac{2^y}{3}$
- $y = \frac{2^x}{3}$
- $y = 3^x$
- $x = 2^y$

$$\log_2 3x = y$$

A

$$\implies 3x = 2^y$$

$$x = \frac{2^y}{3}$$

Save &amp; Next

Question No. 8

$\csc\theta =$

$\frac{1}{\cos\theta}$

$\frac{\cos\theta}{\sin\theta}$

$\frac{1}{\sin\theta}$

$\frac{\sin\theta}{\cos\theta}$



Total questions in exam: 40 | Answered: 0

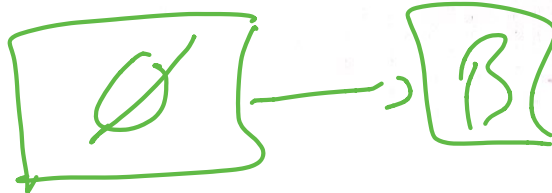
## Question No. 5

The solution set of the equation  $7(2x - 1) = 9 + 14x$  is

- 1  
  $\emptyset$   
 {1,2}  
 {5}

$$\begin{array}{r} 14x - 7 = 14x + 9 \\ -14x \quad \quad -14x \end{array}$$

$$-7 = 9$$



Question No. 9

If  $\theta$  is an acute angle in a right triangle, then  $\tan\theta =$

- $\frac{\text{opposite}}{\text{hypotenuse}}$
- $\frac{\text{opposite}}{\text{adjacent}}$
- $\frac{\text{adjacent}}{\text{opposite}}$
- $\frac{\text{adjacent}}{\text{hypotenuse}}$

B

## Question No. 20

Let  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 3, 5, 7\}$ , and  $B = \{3, 4, 6\}$ . Find  $A \cup B'$

- {4, 6}
- {1, 2, 3, 5, 7}
- {2, 4, 3}
- {1, 2, 3, 4}

$$A = \{1, 3, 5, 7\}$$

$$B' = \{1, 2, 5, 7\}$$

$$A \cup B' = \{1, 2, 3, 5, 7\}$$

**B**

Save & Next



Total questions in exam: 40 | Answered: 0

Question No. 13

Perform the indicated operations  $a b(a^{-1} - b^{-1})$ , where  $a \neq 0, b \neq 0$ 

- $b - a$
- $a - b$
- 0
- $\frac{1}{b} - \frac{1}{a}$

$$\frac{ab}{a} - \frac{ab}{b} = \underline{b - a}$$

↓

A

Total questions in exam: 40 | Answered: 0

## Question No. 29

If  $f(x)$  is a polynomial such that the remainder of the division  $f(x) \div (x + 4)$  equals 10 then

- $f(10) = -4$
- $f(-4) = 10$
- $f(4) = 10$
- $f(10) = 4$

A handwritten blue box with the letter 'B' inside, indicating the correct answer is B.Save & Next حفظ و التالي

Question No. 3

Evaluate  $\lim_{x \rightarrow \infty} (x^4 - x^2 + x - 4) =$

- 4
- 4
- 0
- $\infty$

D

Total questions in exam: 40 | Answered: 0

## Question No. 4

Find  $2f(x) - 3g(x)$ , where  $f(x) = x^2 + 2x - 1$  and  $g(x) = 2x - 4$ .

- $2x^2 - 2x - 14$
- $-3x^2 - 2x - 1$
- $-3x^2 - 2x - 7$
- $2x^2 - 2x + 10$

$$(2x^2 + 4x - 2) - (6x - 12)$$

$$= 2x^2 - 2x + 10$$



Total questions in exam: 40 | Answered: 0

Question No. 14

The range of the function  $f(x) = -x^2 + 1$  is

- $(-\infty, 1]$
- $[1, \infty)$
- $[-1, \infty)$
- $(-\infty, -1]$

A

Question No. 16

Compute the product  $(x-2)(x-3)$ 

- $x^2 + 5x + 6$
- $x^2 - 5x - 6$
- $x^2 - 6x + 5$
- $x^2 - 5x + 6$

$$x^2 - 3x - 2x + 6$$

$$\boxed{x^2 - 5x + 6}$$

Save &amp; Next

Total questions in exam: 40 | Answered: 0

## Question No. 10

Let  $f(x) = x^2 + c$  and  $g(x) = x$ , give the value of  $c$  such that  $f(x+1) = xg(x) + 2x$ .

- $c = 0$   
  $c = 1$   
  $c = 4$   
  $c = -1$

$$f(x+1) = (x+1)^2 + c = x^2 + 2x + 1 + c$$

$$g(x) = x^2 + 2x$$

$$\cancel{x^2} + \cancel{2x} + 1 + c = \cancel{x^2} + \cancel{2x}$$

$$1 + c = 0$$

$$c = -1$$



Question No. 6

Use the quadratic formula to solve this equation:

$$8x^2 = 6x - 1$$

- $x = \{4, \frac{1}{2}\}$
- $x = \{-\frac{1}{2}, \frac{1}{4}\}$
- $x = \{\frac{1}{2}, \frac{1}{4}\}$
- $x = \{2, \frac{1}{4}\}$

$$8x^2 - 6x + 1 = 0$$

$$x_1 = \frac{1}{2}$$

$$x_2 = \frac{1}{4}$$





Question No. 18

Solve the inequality  $|x^2 - 5x + 4| \leq 0$ .

- $S = (1, +\infty)$
- $S = \{1, 4\}$
- $S = (1, 4)$
- $S = [4, +\infty)$

B

Save & Next

Total questions in exam: 40 | Answered: 0

Question No. 11

If  $x+a$  is a factor of the polynomial  $f(x)$  then

- $f(-a) = 0$
- $f(a) = -a$
- $f(-a) \neq 0$
- $f(a) = 0$

A

## Question No. 12

The solution of the equation  $2^x = 3^{2x-1}$  is

- $\frac{\ln 3}{\ln 2 - 2 \ln 3}$
- $\frac{\ln 2}{\ln 2 - 2 \ln 3}$
- $\frac{\ln 2}{2 \ln 3 - \ln 2}$
- $\frac{\ln 3}{2 \ln 3 - \ln 2}$

$$\ln 2^x = \ln 3^{2x-1}$$

$$x \ln 2 = 2x \ln 3 - \ln 3$$

$$2x \ln 3 - x \ln 2 = \ln 3$$

$$x(2 \ln 3 - \ln 2) = \ln 3$$

$$x = \frac{\ln 3}{2 \ln 3 - \ln 2}$$

## Question No. 36

The solution set of the equation  $(\sqrt{2})^{3-5x} = 4^{a+x}$  is

- $\{\frac{1}{2} - \frac{1}{6}a\}$
- $\{\frac{3}{2} - \frac{2}{7}a\}$
- $\{\frac{1}{3} - \frac{1}{9}a\}$
- $\{3 + \frac{2}{9}a\}$

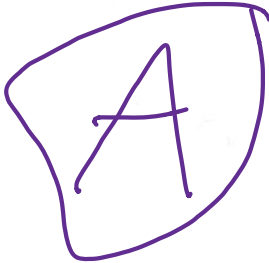
C

Total questions in exam: 40 | Answered: 0

Question No. 7

The complement of the angle  $65^\circ$  is:

- $25^\circ$
- $115^\circ$
- $125^\circ$
- $35^\circ$



Exam: 40 | Answered: 0

No. 26

$x \in \mathbb{R}$  and  $z$  be a complex number. Give the value of  $x$  that makes  $z$  a pure imaginary number.  
 $z = (3x - \sqrt{5}) + (x + 1)i - 2$

- $x = \frac{2+\sqrt{5}}{3}$
- $x = -\frac{\sqrt{5}}{3}$
- $x = \frac{2+\sqrt{5}}{3}$
- $x = \frac{\sqrt{5}}{3}$

C

Question No.

Suppose  $a, b \in \mathbb{R}$  and  $b > 0$ . The solution of the inequality  $0 < |x - a| < b$  is

- $(a - b, a) \cup (a, a + b)$
- $(a - b, a) \cup (a, b)$
- $(-b, a) \cup (a, a + b)$
- $(a - b, a] \cup (a, b)$

A

## Question No. 4

If  $f(x) = 1 - \sqrt{x+2}$ , then the domain of  $f^{-1}(x)$  is

- $(-\infty, \infty)$
- $[1, \infty)$
- $[-2, \infty)$
- $(-\infty, 1]$



## Question No. 27

If  $f(x) = -\frac{1}{3}x + 1$ , the domain of  $f^{-1}(x)$  is

- [-3,1)
- $[-\frac{1}{3},1)$
- [0,  $\infty$ )
- all real numbers



Total questions in exam: 40 | Answered: 18

Question No. 24

Let  $a \in \mathbb{R}$ . If the solution set of the inequality  $|4x - 8| + a > 0$  is  $(-\infty, 2) \cup (2, +\infty)$  then

- a = -1  
 a = 1  
 a = 0  
 a = 2

$$\begin{array}{l}
 |4x - 8| > -a \\
 4x - 8 = -a \\
 4x = -a + 8 \\
 x = \frac{-a + 8}{4}
 \end{array}
 \left|
 \begin{array}{l}
 |4x - 8| < a \\
 4x - 8 = a \\
 4x = a + 8 \\
 x = \frac{a + 8}{4}
 \end{array}
 \right.$$

$$-2a = 0$$

$$a = 0$$

$$-\frac{a+8}{4} = \frac{a+8}{4}$$

$$4(-a+8) = 4(a+8)$$

$$-a+8 = a+8$$

$$-a-a = 8-8$$

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Total questions in exam: 40 | Answered: 0

Question No. 10

Let  $f(x) = x^2 + c$  and  $g(x) = x$ , give the value of  $c$  such that  $f(x+1) = xg(x) + 2x$ .

- c = 0
- c = 1
- c = 4
- c = -1



## Question No. 22

Let  $x \in \mathbb{Z}$ . Simplify the following expression  $a = 3i^{132x^2+4x-3}$

- $a = 3i$
- $a = -3i$
- $a = 3$
- $a = -3$

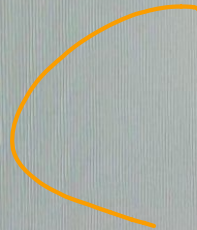
A

Total questions in exam: 40 | Answered: 0

## Question No. 36

The solution set of the equation  $(\sqrt{2})^{3-5x} = 4^{a+x}$  is

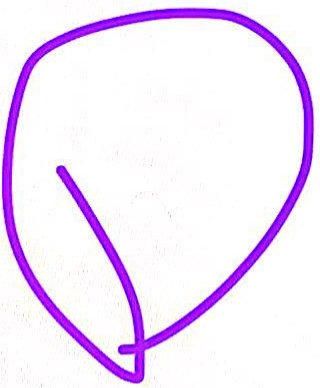
- $\{\frac{1}{2} - \frac{1}{6}a\}$
- $\{\frac{3}{2} - \frac{2}{7}a\}$
- $\{\frac{1}{3} - \frac{4}{5}a\}$
- $\{3 + \frac{4}{5}a\}$



Question No. 3

Evaluate  $\lim_{x \rightarrow \infty} (x^4 - x^2 + x - 4) =$

- 4
- 4
- 0
- $\infty$



Question No. 24

Let  $a$  and  $b$  be nonzero real numbers. Find the inverse of the function  $f(x) = \frac{a+bx}{b-ax}$ .

- $f^{-1}(x) = \frac{bx-a}{ax-b}$
- $f^{-1}(x) = \frac{bx+a}{ax+b}$
- $f^{-1}(x) = \frac{ax+b}{bx-a}$
- $f^{-1}(x) = \frac{bx-a}{ax+b}$

$$x = \frac{a+by}{b-ay}$$

$$xb - xay = a + by$$

$$-xay - by = a - xb$$

$$y(-xa-b) = a-xb$$

$$y = \frac{a-xb}{-xa-b}$$

$$y = \frac{xb-a}{xa+b}$$

(D)

Total questions in exam: 40 | Answered: 18

Question No. 24

Let  $a \in \mathbb{R}$ . If the solution set of the inequality  $|4x - 8| + a > 0$  is  $(-\infty, 2) \cup (2, +\infty)$  then

- a = -1
- a = 1
- a = 0
- a = 2

C

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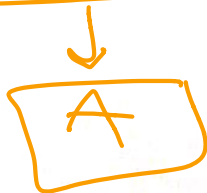
Question No. 11

If  $f(x) = (x-1)^2$  then  $f(a^3) =$

- $a^6 - 2a^3 + 1$
- $a^2 + 2a - 1$
- $a^6 + a + 2$
- $3a^2 + 2a - 1$

$$f(a^3) = (a^3 - 1)^2$$

$$= a^6 - 2a^3 + 1$$



Save & Next

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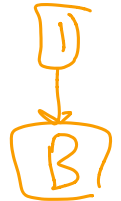
Evaluate  $\lim_{x \rightarrow -3} \frac{x^2 + 7x + 12}{x + 3} =$

- 4
- 1
- 3
- 0



$$\frac{\cancel{(x+3)}(x+4)}{\cancel{x+3}}$$

$$x+4$$
$$-3+4=$$



Question No. 30

The supplement of the angle  $20^\circ$  is:

- $70^\circ$
- $80^\circ$
- $180^\circ$
- $160^\circ$

D

## Question No. 27

If  $f(x) = -\frac{1}{3}x + 1$ , the domain of  $f^{-1}(x)$  is

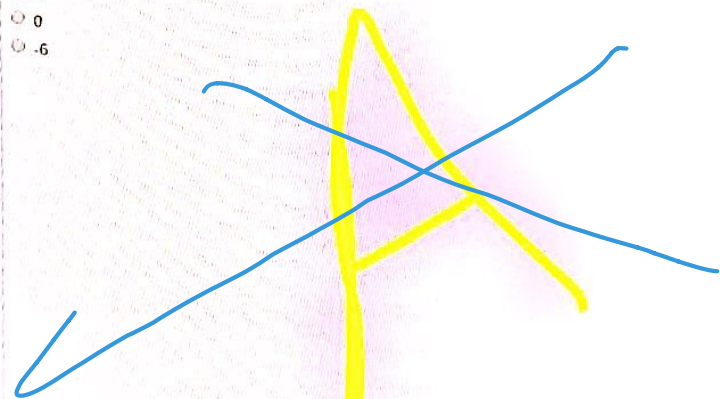
- [-3,1)
- $[-\frac{1}{3}, 1)$
- [0,  $\infty$ )
- all real numbers

D

Question No. 27

Evaluate  $\lim_{x \rightarrow 1} (x^3 + x - 6) =$

- 4
- 4
- 0
- 6



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## Question No. 36

The function  $f(x)$  is constant on an interval  $I$  if for  $x_1, x_2 \in I$ ,

- if  $x_1 < x_2$ , then  $f(x_1) < f(x_2)$ ,
- if  $x_1 \neq x_2$ , then  $f(x_1) = f(x_2)$ ,
- if  $x_1 < x_2$ , then  $f(x_1) > f(x_2)$ ,
- if  $x_1 > x_2$ , then  $f(x_1) > f(x_2)$ ,

B

Total questions in exam: 40 | Answered: 40

Question No. 37

Let  $a > 1$ . The solution set of the equation  $\log_r(2x^2 - a^2) = 2$  is

- S = {a, 2a}
- S = {a}
- S = {-a}
- S = {-a, a}

B

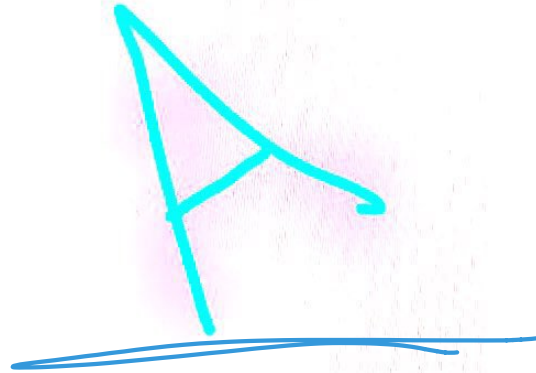
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Total questions in exam 40 | Answered: 0

## Question No. 32

The solution set of the equation  $2 \log_2 x - \log_2(4x + 5) = 0$  is

- (5)
- (-1.5)
- 0
- (-1)

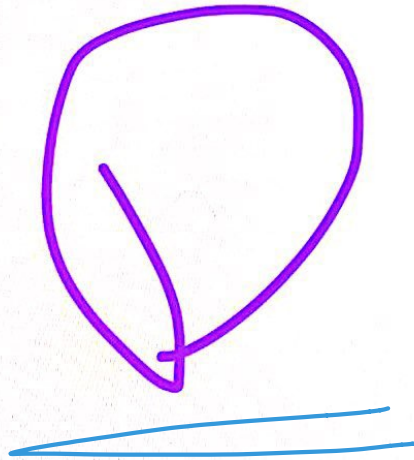
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Question No. 3

Evaluate  $\lim_{x \rightarrow \infty} (x^4 - x^2 + x - 4) =$

- 4
- 4
- 0
- $\infty$

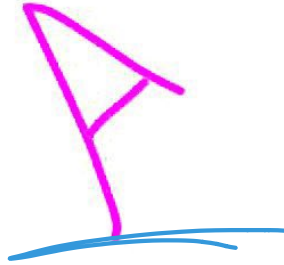


Total questions in exam: 40 | Answered: 0

## Question No. 24

The equation  $y = \log_2(3x)$  can be written as

- $x = \frac{2^y}{3}$
- $y = \frac{2^x}{3}$
- $y = 3^x$
- $x = 2^y$



Save &amp; Next

Total questions in exam: 40 | Answered: 13

## Question No. 18

Which of the following points are on the graph of  $f(x) = 4 + 2 \log_8(1 - 2x)$ ?

- (0, 4), (-1, 6) and  $(\frac{1}{3}, -2)$
- (3, 1), (1, 0) and  $(\frac{1}{3}, -1)$
- (0, 4), (-1, 6) and  $(\frac{1}{3}, 2)$
- (0, 6), (-1, 4) and  $(\frac{1}{3}, 2)$

C

Save &amp; Next

Total questions in exam: 40 | Answered: 0

Question No. 35

Evaluate  $\lim_{x \rightarrow -\infty} \frac{x^3 + x^2 - 1}{x^2 - x - 1} =$

- $-\infty$
- 0
- 1
- 1

A

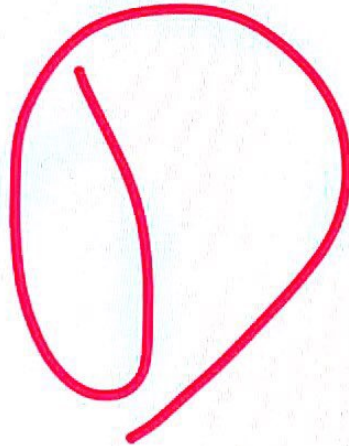
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Total questions in exam: 40 | Answered: 0

Question No. 31

Evaluate  $\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9} =$ 

- $-\frac{1}{4}$
- $-\frac{1}{6}$
- $\frac{1}{2}$
- $\frac{1}{6}$



Save &amp; Next التالي

## Question No. 21

The function  $f(x) = \begin{cases} kx - k & \text{if } x \geq 3 \\ 4 & \text{if } x < 3 \end{cases}$  is continuous if

- $k = 2$
- $k = 1$
- $k = 3$
- $k = \frac{4}{3}$

A

Save & Next حفظ و التالي

Question No. 18

Solve the inequality  $|x^2 - 5x + 4| \leq 0$ .

- $S = (1, +\infty)$
- $S = \{1, 4\}$
- $S = (1, 4)$
- $S = [4, +\infty)$

B

Save & Next حفظ و التالي

## Question No. 29

If  $f(x)$  is a polynomial such that the remainder of the division  $f(x) \div (x + 4)$  equals 10 then

- $f(10) = -4$
- $f(-4) = 10$
- $f(4) = 10$
- $f(10) = 4$





Question No. 24

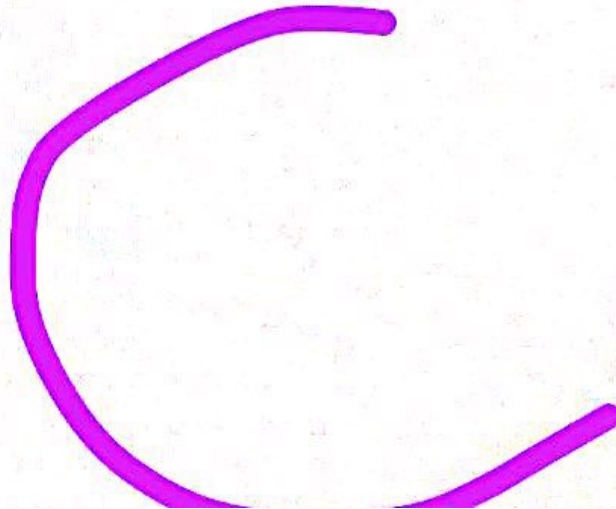
Let  $a$  and  $b$  be nonzero real numbers. Find the inverse of the function  $f(x) = \frac{a+bx}{b-ax}$ .

$f^{-1}(x) = \frac{bx-a}{ax-b}$

$f^{-1}(x) = \frac{bx+a}{ax+b}$

$f^{-1}(x) = \frac{ax+b}{bx-a}$

$f^{-1}(x) = \frac{bx-a}{ax+b}$



Total questions in exam: 40 | Answered: 0

Question No. 34

Evaluate  $\lim_{x \rightarrow 1} \frac{x^2 - 1}{|x - 1|}$ 

- 2  
 6  
 -2  
 1

C

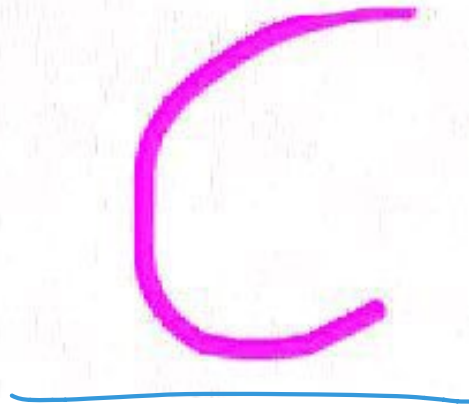
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Total questions in exam: 40 | Answered: 35

## Question No. 4

Let  $a \in \mathbb{R}$  and  $f(x) = 0.9^{(a^2 - 3a + 2)x - 1} - a$ . Give the condition on  $a$  such that  $f(x)$  is increasing.

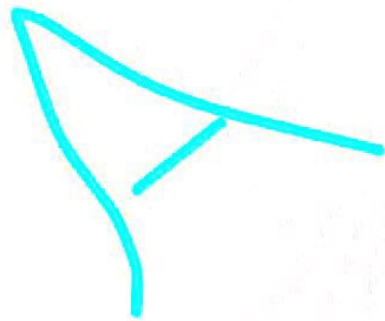
- $a \in (2, \infty)$
- $a \in (-\infty, 1)$
- $a \in (1, 2)$
- $a \in (-\infty, 1] \cup [2, \infty)$



Question No. 23

Evaluate:  $|-12 + (5 - 2)|$

- 9
- 6
- 3
- 4



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Total questions in exam: 40 | Answered: 0

Question No. 5

The solution set of the equation  $7(2x - 1) = 9 + 14x$  is

- 1
- $\emptyset$
- {1,2}
- {5}

B

Question No. 16

Find the value of 'c' that will allow this polynomial to be written as a perfect square.

$$x^2 - x + c$$

- $\frac{1}{2}$
- $\frac{1}{4}$
- 1
- $-\frac{1}{2}$

**B**

Question No. 8

$\csc\theta =$

- $\frac{1}{\cos\theta}$
- $\frac{\cos\theta}{\sin\theta}$
- $\frac{1}{\sin\theta}$
- $\frac{\sin\theta}{\cos\theta}$

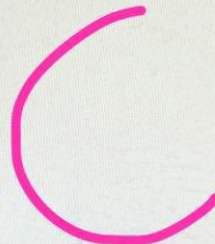


Total questions in exam: 40 | Answered: 37

Question No. 27

If  $a \neq 1$  is a positive real number such that  $5^x = a$  then  $x =$ 

- $\frac{\ln 5}{\ln a}$
- $\ln\left(\frac{a}{5}\right)$
- $\frac{\ln a}{\ln 5}$
- $\ln\left(\frac{5}{a}\right)$

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## Question No. 28

If  $\theta = 90^\circ$  then  $\theta$  is called

- an obtuse angle
- a straight angle
- a right angle
- an acute angle

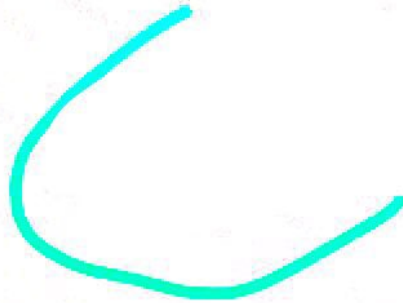
C

Total questions in exam: 40 | Answered: 18

Question No. 24

Let  $a \in \mathbb{R}$ . If the solution set of the inequality  $|4x - 8| + a > 0$  is  $(-\infty, 2) \cup (2, +\infty)$  then

- a = -1
- a = 1
- a = 0
- a = 2



Save &amp; Next

Question No. 26

Let  $f(x) = x^2 + c$  and  $g(x) = x$ , give the value of  $c$  such that  $f(x+1) = xg(x) + 2x$ .

- $c = 1$
- $c = -1$
- $c = 4$
- $c = 0$

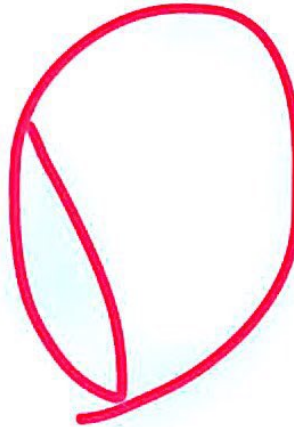
B

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Question No. 16

Compute the product  $(x - 2)(x - 3)$

- $x^2 + 5x + 6$
- $x^2 - 5x - 6$
- $x^2 - 6x + 5$
- $x^2 - 5x + 6$



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Total questions in exam: 40 | Answered: 0

Question No. 11

If  $x+a$  is a factor of the polynomial  $f(x)$  then

- $f(-a) = 0$
- $f(a) = -a$
- $f(-a) \neq 0$
- $f(a) = 0$

A

## Question No. 22

Let  $a \in \mathbb{R}$ . Give the condition on  $a$  that makes the relation  $F = \{(-1, 1), (2, 1), (a, 3), (-2, a)\}$  a function

- $a \in \{-1, -2, 1, 2, 3\}$
- $a \in \mathbb{R} \setminus \{1, 3\}$
- $a \in \mathbb{R}$
- $a \in \mathbb{R} \setminus \{-1, 2, -2\}$

D

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Total questions in exam: 40 | Answered: 0

Question No. 34

Evaluate  $\lim_{x \rightarrow 1} \frac{x^2 - 1}{|x - 1|}$ 

- 2  
 6  
 -2  
 1

~~C~~ A

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Total questions in exam: 40 | Answered: 0

Question No. 9

If  $\theta$  is an acute angle in a right triangle, then  $\tan\theta =$ 

- $\frac{\text{opposite}}{\text{hypotenuse}}$
- $\frac{\text{opposite}}{\text{adjacent}}$
- $\frac{\text{adjacent}}{\text{opposite}}$
- $\frac{\text{adjacent}}{\text{hypotenuse}}$





Total questions in exam: 40 | Answered: 0

Question No. 40

The graph of  $f(x) = 3^x$  is

- Increasing
- Constant
- Decreasing and Increasing
- Decreasing

A



Total questions in exam: 40 | Answered: 0

Question No. 14

The range of the function  $f(x) = -x^2 + 1$  is

- $(-\infty, 1]$
- $[1, \infty)$
- $[-1, \infty)$
- $(-\infty, -1]$



## Question No. 23

Let  $f(x) = -\frac{3}{2}x + 4$ , find the value of  $a$  such that  $f(2a) = 7$ .

- a = 0.  
 a = 1.  
 a = -1.  
 a = 2.

$$-\frac{3}{2}(2a) + 4 = ?$$

$$-3a + 4 = ?$$

$$-3a = 3$$
$$\boxed{a = -1}$$

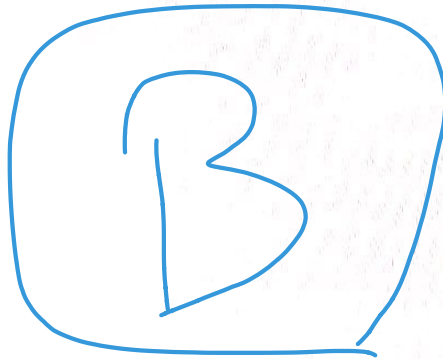
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Total questions in exam: 40 | Answered: 0

Question No. 30

Solve  $1 < 7 - x < 10$ 

- (-6,-3)
- (-3,6)
- (-6,3)
- (3,6)

A large, hand-drawn blue circle with a thick outline, containing the letter 'B' in a simple, bold font. The circle is centered on the page.Save & Next حفظ و التالي

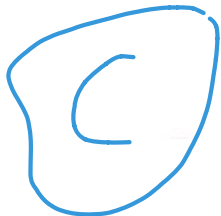
## Question No. 29

Let  $f(x) = ax^2 + bx + 1$ , find the values of  $a$  and  $b$  such that  $f(x) = f(-x)$ , for all  $x \in \mathbb{R}$ .

- $a = b = 1$ .
- $a = -1$  and  $b = 1$ .
- $a \in \mathbb{R}$  and  $b = 0$ .
- $a \in \mathbb{R}$  and  $b = 1$ .

$$ax^2 + bx + 1 = a(-x)^2 + b(-x) + 1$$

$$ax^2 + bx + 1 = ax^2 - bx + 1$$



$$\leftarrow \boxed{ax^2 + 1 = ax^2 + 1}$$

Total questions in exam: 40 | Answered: 40

## Question No. 37

Let  $a > 1$ . The solution set of the equation  $\log_x(2x^2 - a^2) = 2$  is

- S = {a, 2a}
- S = {a}
- S = {-a}
- S = {-a, a}

A large, handwritten blue letter 'B' is drawn in the center of the page, indicating the correct answer is option B.

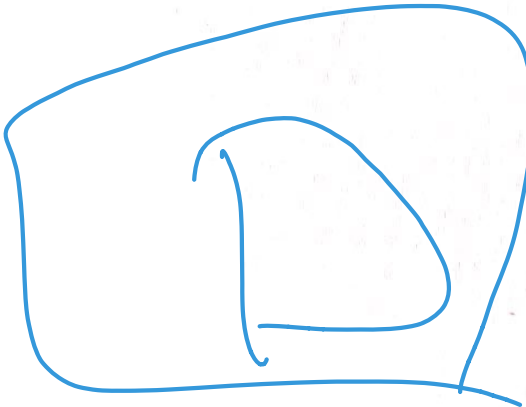
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Total questions in exam: 40 | Answered: 0

Question No. 31

Evaluate  $\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9} =$ 

- $-\frac{1}{4}$
- $-\frac{1}{6}$
- $\frac{1}{2}$
- $\frac{1}{6}$



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