

Question No. 13

The Solution set of $|4 + 8x| > -20$ is

- $(-\infty, -3) \cup (2, \infty)$
- $(-\infty, \infty)$
- $(2, \infty)$
- \emptyset

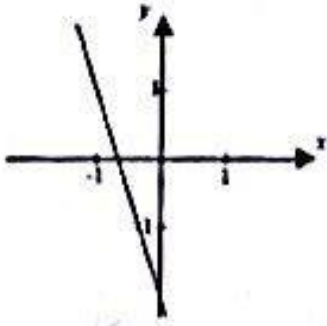
Question No. 17

+ve

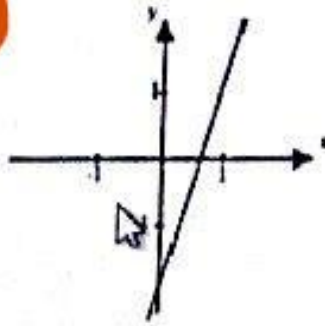
The slope of a linear function is 3 and its y-intercept is -2.

Which graph represents this function?

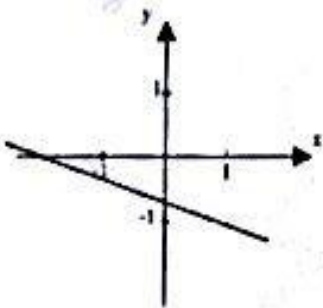
I



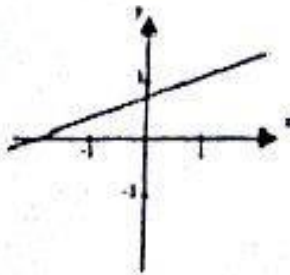
II



III



IV



- II
- III
- IV
- I

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Question No. 26

Let $f(x)$ be a one-to-one function, then $g(x)$ is the inverse function of $f(x)$ if

- $(f \circ g)(x) = x$ only
- $(f \circ g)(x) \neq x$ and $(g \circ f)(x) \neq x$
- $(f \circ g)(x) = x$ and $(g \circ f)(x) = x$
- $(f \circ g)(x) \neq x$ only

Question No. 26

Which of the following functions is one-to-one

- $f(x) = -2x^2 + 5$
- $f(x) = \sqrt{16 - x^2}$
- $f(x) = -2x + 5$
- $f(x) = 5x^2 - 1$

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Question No. 9

The quotient $\frac{2}{-i}$ can be written as

- 1
- 2i
- 2i
- 1

جواب
2i

$$\frac{2}{-i} \cdot \frac{i}{i} = \frac{2i}{-i^2}$$
$$= \frac{2i}{-(-1)} = 2i$$

Question No. 18

Find $\frac{f(x)}{g(x)}$ and its domain, where $f(x) = 3x - 6$, $g(x) = x - 2$

- 1; all real numbers
- 3; all real numbers
- 3; all real numbers except $x = 2$
- 3; all real numbers except $x = 3$

$$\frac{3x - 6}{x - 2} = \frac{3(x - 2)}{x - 2}$$

$$= 3$$

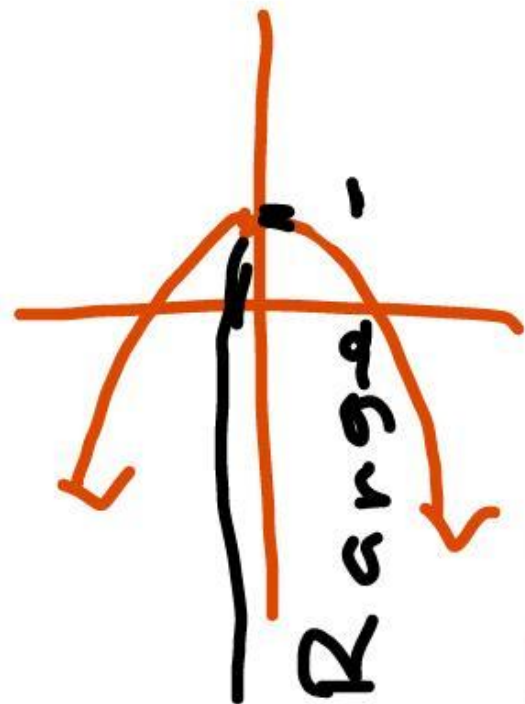
Domain: $x - 2 \neq 0$

$$x \neq 2$$

Question No. 20

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

- [1, ∞)
- (-∞, -1]
- (-∞, 1]
- [-1, ∞)



$(-\infty, 1]$

Question No. 19

Find the domain and the range of the function $f(x) = (x + 8)^2 - 7$

- Domain $(-8, \infty)$, range $(-\infty, \infty)$
- Domain $(-\infty, \infty)$, range $[-7, \infty)$
- Domain $(-\infty, \infty)$, range $(-8, \infty)$
- Domain $(-7, \infty)$, range $(-\infty, \infty)$

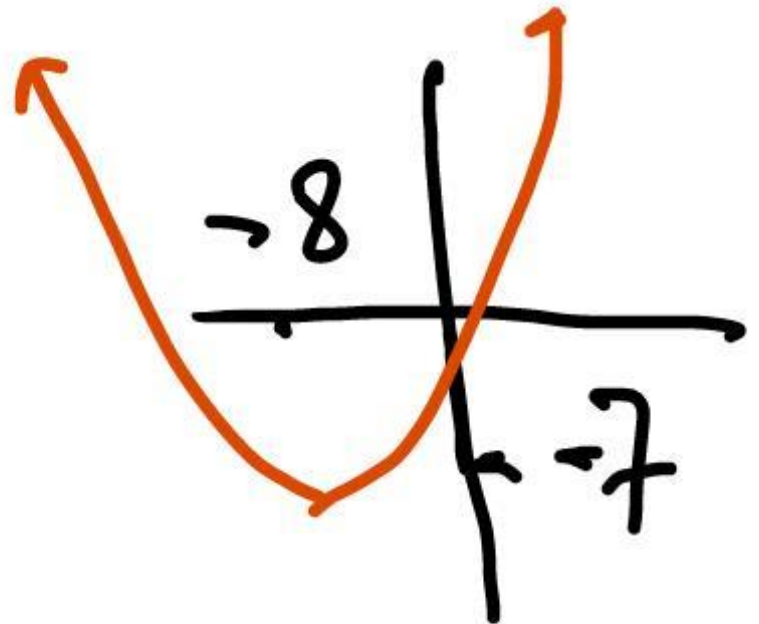
vertex
 $(-8, -7)$

Domain

$(-\infty, \infty)$

Range

$[-7, \infty)$



Question No. 21

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The interval where the graph of $f(x) = x^2 + 2x - 3$ decreases is

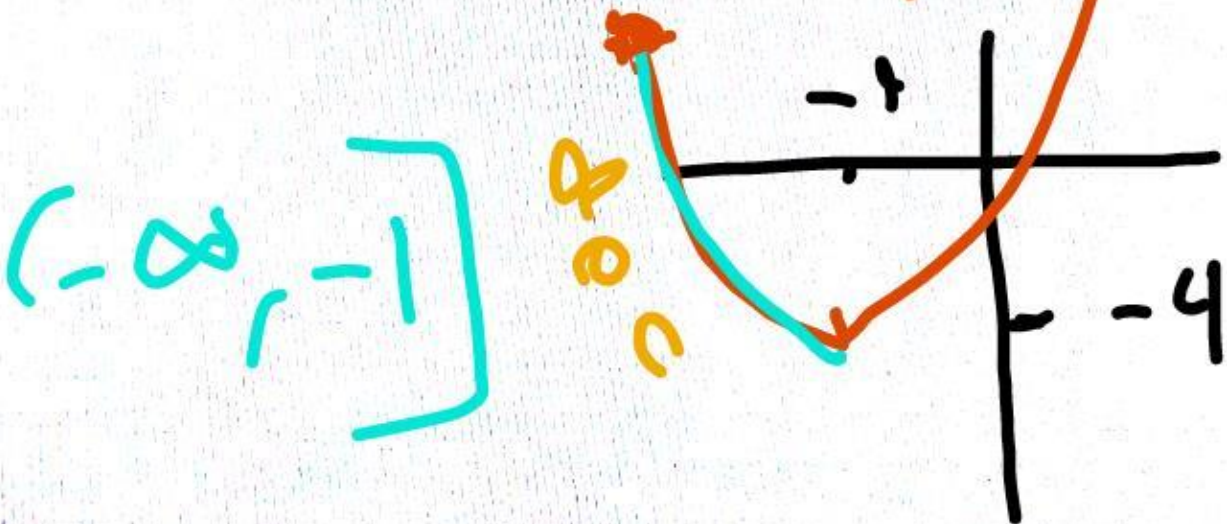
- [-1, ∞)
- ($-\infty$, ∞)
- ($-\infty$, -1]
- [-3, ∞)

Vertex (h, k)

$$h = \frac{-b}{2a} = \frac{-2}{2} = -1$$

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

(-1, -4)



$(-\infty, -1]$

decreasing

Question No. 15

The function in the given figure is

Chart Area



- increasing on the interval $[0, 10]$
- constant on the interval $[5, 15]$
- decreasing on $[-5, 0] \cup [10, 15]$
- decreasing on the interval $[-9, 16]$

Question No. 18

If $f(x) = \frac{1}{x}$ and $g(x) = x + 2$, what is $g(f(4))$?

- $\frac{1}{6}$
- $\frac{9}{4}$
- $\frac{25}{4}$
- $\frac{3}{2}$

$$g(f(4)) = g\left(\frac{1}{4}\right)$$

$$= \frac{1}{4} + 2$$

$$= \frac{1 + 8}{4} = \frac{9}{4}$$

Question No. 14

The domain of $f(x) = \sqrt{4x}$ is

- $(0, \infty)$
- $\mathbb{R} \setminus \{4\}$
- $(-\infty, \infty)$
- $[0, \infty)$

$$4x \geq 0$$

$$x \geq 0$$

$$[0, \infty)$$

Question No. 30

The solution of the exponential equation $\left(\frac{1}{2}\right)^{2x} = 64$ is

- $x = \frac{1}{3}$
- $x = 3$
- $x = \frac{-1}{3}$
- $x = -3$

$$2^{-2x} = 2^6$$

$$-2x = 6$$

$$x = \frac{-6}{2}$$

$$x = -3$$

Question No. 8

The solution set of the equation $\frac{1}{15}(2x + 5) = \frac{x+2}{9}$ is

- (7)
- (5)
- (-5)
- (-7)

$$9(2x+5) = 15(x+2)$$

$$18x + 45 = 15x + 30$$

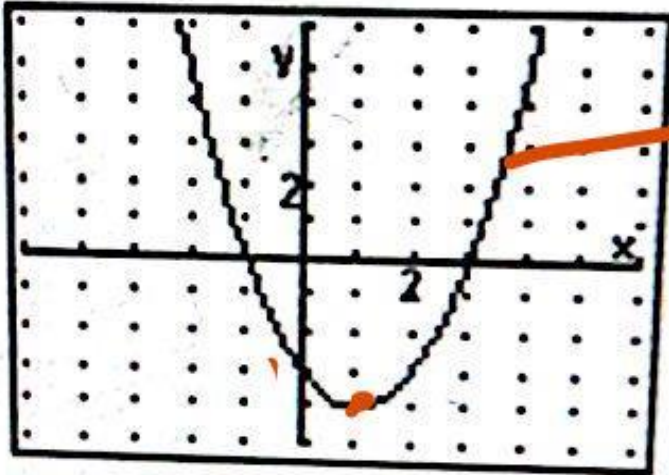
$$18x - 15x = 30 - 45$$

$$3x = -15$$

$$x = \frac{-15}{3} = -5$$

Question No. 19

Which is the equation for this graph?



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

} $a < 0$

اذا $a > 0$
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اذا $a < 0$
المنحنى مغلق

Question No. 30

The solution of the exponential equation $\left(\frac{3}{2}\right)^{2x+1} = \frac{4}{9}$ is

- $x = -\frac{3}{2}$
- $x = \frac{4}{9}$
- $x = \frac{1}{2}$
- $x = \frac{3}{2}$

$$\left(\frac{3}{2}\right)^{2x+1} = \left(\frac{3}{2}\right)^{-2}$$

$$2x + 1 = -2$$

$$2x = -2 - 1$$

$$2x = -3$$

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

Question No. 16

The slope of the line $x = -3$ is

- 1
- Undefined
- 1
- 0

vertical
Line

خط راستی
نیست صرف

Question No. 28

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

- $(-\infty, 0)$
- $(0, \infty)$
- $(-2, \infty)$
- $(2, \infty)$

Question No. 17

Write the equation of the line passes through $(-5,6)$, and perpendicular to the line $x = -2$

- $-5x + 6y = -2$
- $x = -5$
- $y = 6$
- $5x + 6y = 2$

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العمودي عليه هو
خط افقي

$$y = 6$$

Question No. 19

Find the equation of the quadratic function that has a vertex at $(-4, -4)$ and has the point $(-3, -5)$ on its graph.

- $f(x) = x^2 + 8x - 4$
- $f(x) = -3x^2 + 8x + 20$
- $f(x) = -x^2 + 4x - 4$
- $f(x) = -x^2 - 8x - 20$

$$\begin{aligned} f(x) &= a(x-h)^2 + k \\ &= a(x+4)^2 - 4 \end{aligned}$$

$$f(-3) = a(-3+4)^2 - 4$$

$$\rightarrow -5 = a - 4 \implies a = -1$$

$$f(x) = -x^2 - 8x - 16 - 4$$

Question No. 15

If $f(x) = \frac{3}{x-2}$ and $g(x) = \frac{4}{x+5}$. Find the difference of $f(x)$ and $g(x)$

$(f-g)(x) = -\frac{1}{x-7}$

$(f-g)(x) = \frac{-x+7}{(x-2)(x+5)}$

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

$(f-g)(x) = \frac{-x+23}{(x-2)(x+5)}$

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

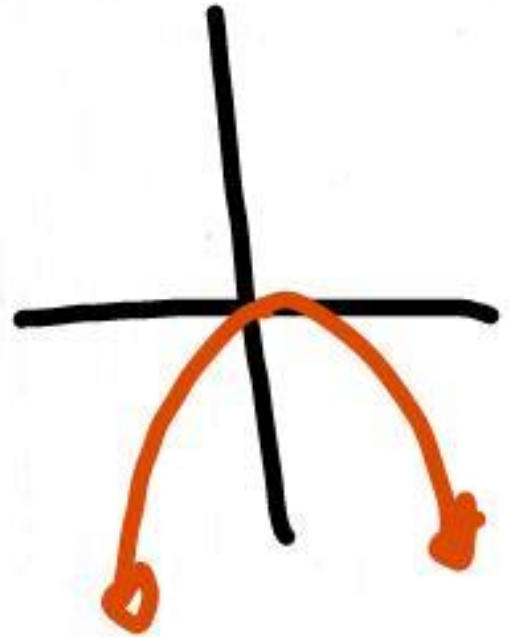
$$= \frac{3(x+5) - 4(x-2)}{(x-2)(x+5)}$$

$$= \frac{3x+15-4x+8}{(x-2)(x+5)}$$

Question No. 10

The range of $f(x) = -x^2$ is

- $(-\infty, -1]$
- $(0, \infty)$
- $(-\infty, 0]$
- $[-1, \infty)$



Question No. 27

The inverse of $f(x) = (5x-1)^3$ is

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

$f^{-1}(x) = 5(\sqrt[3]{2x} - 1)$

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

$f^{-1}(x) = \frac{1}{5}(\sqrt[3]{x} - 1)$

$$y = (5x - 1)^3$$

$$x = (5y - 1)^3$$

$$\sqrt[3]{x} = 5y - 1$$

$$5y = \sqrt[3]{x} + 1$$

$$y = \frac{1}{5}(\sqrt[3]{x} + 1)$$

Question No. 16

If $f(x) = \sqrt{x+2}$ and $g(x) = 3x - 5$. Find $h(x) = (f \circ g)(x)$

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

$$f \circ g(x) = f(g(x))$$
$$= f(3x - 5)$$

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

$$= \sqrt{3x - 3}$$

Save & Next

Question No. 28

The range of the function $f(x) = 1 + 2^{5x}$ is

- $(0, \infty)$
- $(1, \infty)$
- $(2, \infty)$
- $(-\infty, \infty)$

Question No. 25

A function $f(x)$ is one-to-one if

- $a = b \Rightarrow f(a) \neq f(b)$
- $f(a) = f(b) \Rightarrow a \neq b$
- $a \neq b \Rightarrow f(a) \neq f(b)$
- $a \neq b \Rightarrow f(a) = f(b)$

Question No. 12

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

- 7
- 2
- 7
- 2

$$4y = 8x - 28$$

$$y = \frac{8}{4}x - \frac{28}{4}$$

$$= 2x - 7$$

↓ slope

Question No. 29

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

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

$y = -3$