Choose the Correct answer :

1) One of the following number is irrational :

a) $\sqrt{9}$ b) $-\frac{2}{3}$ c) 3.14 d) $0.0100100001..$

2) The Set $\left\{ \frac{a}{b} : a, b \in \mathbb{Z}, b \neq 0 \right\}$ is called :

a) real numbers   b) integers   c) natural numbers   d) rational

3) The integers Set is :

a) $\{1, 2, 3, \cdots\}$ b) $\{0, 1, 2, 3, \cdots\}$

c) $\{\cdots, -3, -2, -1, 0, 1, 2, 3, \cdots\}$ d) $\{\cdots, -3, -2, -1, 0\}$

4) The expression " Three less than twice a number " trans -lated to :

a) $3 - x^2$ b) $2x - 3$ c) $x^2 - 3$ d) $3 - 2x$

5) 35% of 40 is :

a) 35

b) 0.875

c) 14

d) 10

6.) what percent of 200 is 1 :

a) 5%

b) 25%

c) 10%

d) 0.5%

7) "two out of some number" translated to :

a) 2x

b) $\frac{2}{x}$

c) $\frac{x}{2}$

d) x^2

8) The slope of the line passing through $(-2, -3)$ and $(-4, -6)$ is :

a) $\frac{2}{3}$
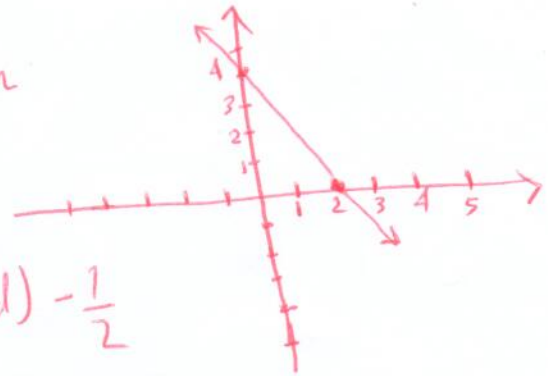
b) $-\frac{3}{2}$

c) $\frac{3}{2}$

d) $-\frac{2}{3}$

9) the slope of the line $2y = 5$ is :

a) 2

b) 5

c) 0

d) undefined

10) The slope of the line x = 0 is :

a) 0   b) 1   c) -1   d) undefined

---

11) The slope of the line showed in the graph is :

a) $\frac{1}{2}$ b) -2   c) 2   d) $-\frac{1}{2}$

---

12) The line which has slope of -3 is :

a) decreasing   b) increasing   c) vertical   d) horizontal

---

13) The point (-3,-2) is located at the quadrant :

a) III   b) I   c) IV   d) II

---

14) The second coordinate is negative at the quadrants :

a) III and IV   b) III and I   c) I and II   d) I and IV

15) The first Coordinate is positive at the Coordinates:

a) I and II

b) II and III

c) I and IV

d) III and IV

---

16) The x-intercept of $2x + 3y = 6$ is:

a) $(0, 3)$

b) $(3, 0)$

c) $(-3, 0)$

d) $(2, 0)$

---

17) The y-intercept of $x - \frac{y}{2} = -5$ is:

a) $(10, 0)$

b) $(\frac{5}{2}, 0)$

c) $(\frac{2}{5}, 0)$

d) $(-10, 0)$

---

18) The degree of $7 - 10x$ is:

a) 10

b) -10

c) 7

d) 1

---

19) The degree of 5 is:

a) 5

b) 1

c) -1

d) 0

20) The degree of $2x^2y^3 - xy^4 + 5w^6$ is :

a) 6   b) 3   c) 4   d) 7

---

21) The polynomial $2xyz$ is :

a) Binomial

   b) Trinomial

   c) Monnomial   d) None

---

22) The polynomial $3x^4 - x^3 + x^2 - 1$ is :

a) Mononomial   b) Binomial   c) Trinomial   d) None

---

23) One of the following is Trinomial :

a) x^3

   b) $3x$ c) xyz d) $x+y+1$

---

24) One of the following is polynomial :

a) $\dfrac{3}{x+1}$ b) $1 - \sqrt{2}\, x$

   c) $\sqrt{x} + 3$ d) $x^{-2} + x^{\frac{5}{3}}$

25) One of the following points satisfies the inequality $2x + 3y \leq 5$:

a) $(1, 3)$ b) $(-1, 3)$ c) $(1, 1)$ d) $(2, 2)$

26) One of the following points is located on the line $y = 2x - 3$:

a) $(2, 3)$ b) $(0, -3)$ c) $(3, 2)$ d) $(-3, 0)$

27) The value of $-x^2$ when $x = -3$ is :

a) 9 b) -6 c) 6 d) -9

28) The value of $\dfrac{2x^2 y - 3}{y^2 + 3x}$ when $x = -2$ and $y = 3$ is :

a) 7 b) $\dfrac{1}{7}$ c) -1 d) 3

29) The sum of two numbers with different signs (positive + negative) is :

a) positive

b) Zero   c) negative   d) Can not be determined

---

30) The multiplication of two negative numbers:

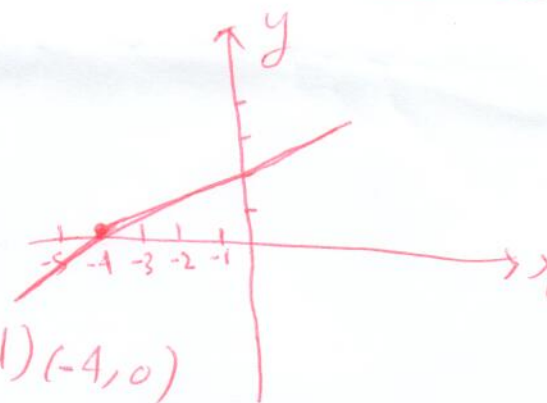a) Can not be determined   b) positive   c) negative   d) Zero

---

31) The x-intercept of the line as showed in the graph is :

a) $(2,0)$

b) $(0,2)$ c) $(0,-4)$ d) $(-4,0)$

---

32) The simplification of $\left(-2x^2y^{-3}\right)^2$ is :

a) $-4x^4y^{-6}$ b) $-4x^4y^5$ c) $4x^4y^{-6}$ d) $4x^4y^{-1}$

33) The Simplification of $(-3x^{-2}y^3)^3$

a) $\dfrac{27y^9}{x^6}$

b) $-\dfrac{27y^6}{x}$

c) $\dfrac{-27y^9}{x^6}$

d) $\dfrac{27y^6}{x}$

---

34) The value of $\left(\dfrac{2}{3}\right)^{-3}$ is :

a) $\dfrac{8}{27}$

b) $-\dfrac{6}{9}$

c) $\dfrac{27}{8}$

d) $\dfrac{-1}{3}$

---

35) The value of $\left(-\dfrac{3}{5}\right)^0$ is :

a) 0

b) $-\dfrac{3}{5}$

c) $\dfrac{3}{5}$

d) 1

---

36) The simplification of $\left(\dfrac{4x^2}{y^3}\right)\left(\dfrac{x^{-3}}{2y}\right)^2$ is :

a) $\dfrac{1}{x^4y^5}$

b) $\dfrac{x^4}{y^5}$

c) $\dfrac{y^5}{x^4}$

d) x^4y^5

---

37) If $a < 0, b < 0$, then :

a) $a+b=0$

b) $a+b<0$

c) $a+b>0$

d) the sign ~~value~~ of $a+b$ can not be determined

38) The multiplicative inverse of -2 is :

a) 2   b) $-\frac{1}{2}$ c) $\frac{1}{2}$ d) -2

39) The additive inverse of $\frac{3}{5}$ is :

a) $\frac{3}{-5}$ b) $\frac{5}{3}$ c) $-\frac{5}{3}$ d) $\frac{3}{5}$

40) If the point $(3, 3a-2)$ is locuted on the line $y = 2x - 1$, then the value of a is :

a) $\frac{7}{3}$ b) 3   c) -2   d) $\frac{3}{7}$

41) If the slope of the line containing $(-1, -2)$ and $(0, a)$ is 3, the the value of a :

a) -3   b) 3   c) 1   d) -1

6. The degree of $f(x) = 2 - x$ is :

(a) 1   b) 2   c) -1   d) 0

---

7. one of the following ordered pairs is a solution
of the equation $y = 3x - 1$:

a) $(2, 4)$ b) $(3, 1)$ c) $(0, 0)$ (d) $(-1, -4)$

عوض قيم x،y في كل خيار في المعادلة المعطاة

a) $(\overset{x}{2}, \overset{y}{4})$: $4 = 3(2) - 1$
             $4 = 6 - 1$
             $4 = 5$ X

b) $(3, 1)$: $1 = 3(3) - 1$
             $1 = 9 - 1$
             $1 = 8$ X

c) $(0, 0)$: $0 = 3(0) - 1$
             $0 = 0 - 1$
             $0 = -1$ X

d) $(-1, -4)$
             $-4 = 3(-1) - 1$
             $-4 = -3 - 1$
             $-4 = -4$ ✓

---

8. The result of $(2x + 3)(2x - 3)$ is :

a) $2x - 6$ b) $4x^2 - 6$ (c) $4x^2 - 9$ d) $4x$

$(2x + 3)(2x - 3) = 4x^2 - 6x + 6x - 9$
         ① $= 4x^2 - 9$

مربع الأول - مربع الثاني
②

9. The Scientific notation of 0.000000375 is :

a) 3.75×10^{7} b) 37.5×10^{-8} ⓒ 3.75×10^{-7} d) 37.5×10^{8}

الحل :

0.000000375

نحرك الفاصلة v خانات الى اليمين

---

10. The Simplification of $\left(-2x^{3}y^{2}\right)^{2}$ is :

a) $-4x^{6}y^{4}$ b) $4x^{5}y^{4}$ ⓒ $4x^{6}y^{4}$ d) $2x^{6}y^{4}$

$$\left(-2x^{3}y^{2}\right)^{2} = (-2)^{2} \cdot x^{6} \cdot y^{4} = 4x^{6}y^{4}$$

---

11. The Set for which the rational expression $\dfrac{(x+2)(x-1)}{(x+3)(x-4)}$ is not defined :

a) $\{2,-1\}$ b) $\{-2,1\}$ ⓒ $\{-3,4\}$ d) $\{3,-4\}$

الحل :

not defined :   المقام = صفر

$(x+3)(x-4) = 0$

$x+3 = 0$ | $x-4 = 0$

$x = -3$ | $x = 4$

(4)

12. $Lcm (x^2 - x, x^2 - 1) =$:

(a) $x^3 - x$

b) $x - 1$

c) $x^4 - x$

d) $x(x+1)$

الحل:

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

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

$Lcm = \boxed{x(x-1)(x+1)}$

$= x(x^2 - 1)$

$= x^3 - x$

العوامل

$\begin{pmatrix} x \\ x-1 \\ x+1 \end{pmatrix}$

اختر الاس الأكبر
من على قوة

---

13. 30 is what percent of 150 :

a) 30%

b) 25%

c) 15%

(d) 20%

الحل:

$30 = X \cdot 150$

$X = \dfrac{30}{150} = 0.2$

$0.2 (100) = 20\%$

14. The opposite (additive inverse) of $-\frac{3}{2}$ is:

(a) $\frac{2}{3}$ b) $\frac{3}{2}$ c) $\frac{3}{-2}$ d) $-\frac{2}{3}$

فقط اعكس الاشارة

15: The reciprocal (multiplicative inverse) of $-\frac{2}{3}$ is

(a) $\frac{3}{-2}$ b) $\frac{3}{2}$ c) $\frac{2}{-3}$ d) $\frac{2}{3}$
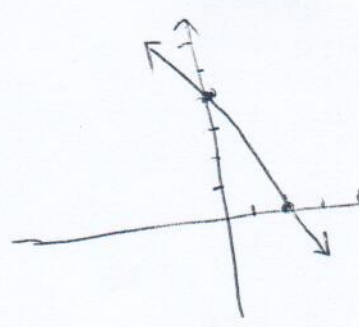
فقط اقلب الكسر

16. The slope of the line in the figure is:

a) $-\frac{1}{2}$ b) $\frac{1}{2}$ c) 2   (d) -2

$\overset{x_1\ y_1}{(0, 4)}$

أمثلة نقطتين

$\underset{x_2\ y_2}{(2, 0)}$

$Slope = m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{0 - 4}{2 - 0} = \dfrac{-4}{2} = -2$

17. The slope of the line $y = 2 - 3x$ is:

a) 2   b) 3   c) -2   d) -3

Slope: x معامل

---

18. The result of the devision $\dfrac{9x^5 - 6x^3}{3x^2}$ is equal to:

a) $9x^3 - 2x$ (b) $3x^3 - 2x$ c) $3x^3 - 6x$ d) $3x^7 - 2x^5$

$$\frac{9x^5}{3x^2} - \frac{6x^3}{3x^2} = 3x^3 - 2x$$

---

19. The y-intercept of $x - 3y = 6$ is:

a) $(3, -1)$ b) $(6, 0)$ c) $(-3, -3)$ (d) $(0, -2)$

put $x = 0$

$0 - 3y = 6$

$-3y = 6$

$y = \dfrac{6}{-3} = -2$

$(0, -2)$

20. The factorization of $6x^3 - 2x^2 + 3x + 1$ is :

a) $(2x^2 - 1)(3x - 1)$

b) $(2x - 1)(3x^2 - 1)$

c) $(3x^2 + 1)(2x + 1)$

d) $(2x^2 + 1)(3x + 1)$

الحل

Grouping

$6x^3 + 2x^2 + 3x + 1$

$2x^2(3x + 1) + (3x + 1)$

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

---

21. The expression $\dfrac{x^2 y}{9 x^{-3} y^2}$ with positive exponents is :

a) $\dfrac{x^5}{9y}$ b) $\dfrac{9}{x^5 y^3}$ c) $9x^5 y^3$ d) $\dfrac{x^5 y^3}{9}$

الحل

$\dfrac{x^2 y}{9 x^{-3} y^2} = \dfrac{x^{2-(-3)} \; y^{1-2}}{9} = \dfrac{x^5 y^{-1}}{9} = \dfrac{x^5}{9y}$

Q perform and simplify

$$\frac{x^2 + 7x + 10}{x^2 - 25} \div \frac{x^2 + x - 2}{10 - 2x}$$

$$\Rightarrow \frac{x^2 + 7x + 10}{x^2 - 25} \cdot \frac{10 - 2x}{x^2 + x - 2}$$

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

$$= \boxed{\frac{-2}{x-1}}$$

1) Graph the equation $2x - 3y = 6$ using intercepts:

a) x-intercepts [put $y = 0$]
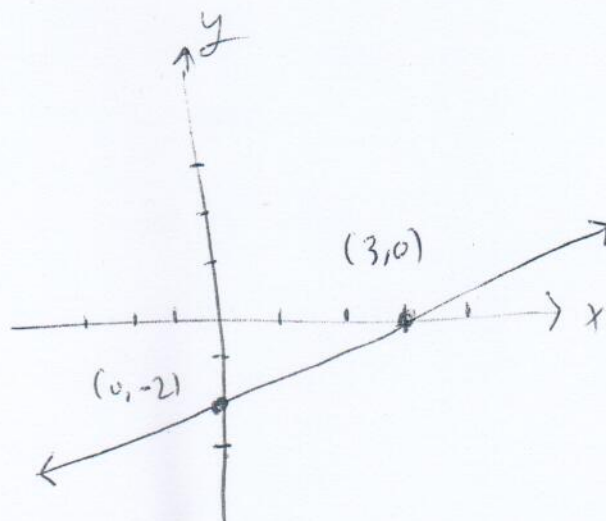
$$2x - 3(0) = 6$$
$$2x - 0 = 6$$
$$2x = 6 \Rightarrow \boxed{(3, 0)}$$
$$x = 3$$

b) y-intercept [put $x = 0$]

$$2(0) - 3y = 6$$
$$0 - 3y = 6$$
$$-3y = 6 \Rightarrow \boxed{(0, -2)}$$
$$y = \frac{6}{-3} = -2$$

simplify $\dfrac{x^2-1}{(x+1)^2} \cdot \dfrac{2x^2+4x+2}{x^2-3x+2}$

$\dfrac{(x-1)(x+1)}{(x+1)(x+1)} \cdot \dfrac{2(x^2+2x+1)}{(x-2)(x-1)}$

$= \dfrac{(x-1)(x+1)}{(x+1)(x+1)} \cdot \dfrac{2(x+1)(x+1)}{(x-2)(x-1)}$

$= \boxed{\dfrac{2(x+1)}{x-2}}$

$\boxed{9}$ factor $\quad x^2-3xy+28y^2$

اولًا : اعتبر y غير موجوده

$(x-7)(x+4)$

$\Rightarrow x^2-3x+28$

by calculator

$\boxed{7,-4}$

ايجى الاشاره

ثم اضفت y

$(x-7y)(x+4y)$

$$\text{(12)}$$

Solve $\dfrac{x}{2} - \dfrac{x+1}{3} = 4 - \dfrac{2}{5}x$

multiply by 30

$\dfrac{x}{2} \cdot 30 = \dfrac{30x}{2} = 15x$

$\bullet$ $\dfrac{x+1}{3} \cdot 30 = \dfrac{30(x+1)}{3} = 10(x+1) = 10x + 10$

$4 \cdot 30 = 120$

$\dfrac{2}{5}x \cdot 30 = \dfrac{60x}{5} = 12x$

$\Rightarrow$ $15x - (10x+10) = 120 - 12x$

$15x - 10x - 10 = 120 - 12x$

$15x - 10x + 12x = 120 + 10$

$17x = 130$

$$\boxed{x = \dfrac{130}{17}}$$

Choose the Correct answer:

1. One of the following is a difference of squares:

a) $x^2 + 1$ b) $x^2 - x$ c) $9x^4 - 1$ d) $x^2 - 4x + 5$

Difference of Squares: متغيرين صريحين فقط بينهما إشارة الطرح

• طرح • المقدار الاول لو جذر والثاني له جذر

$$9x^4 - 1 = (3x^2 - 1)(3x^2 + 1)$$
$$3x^2 \quad 1$$

---

2. The slope of the line $y = -5$ is equal to:

a) 1   b) 0   c) -5   d) -1

أي صيغة الميل السلوب Slope = 0

---

3. The result of $(x^3 + y^2)^2$ is:

a) $2x^3 + 2y^2$ b) $x^6 - 2x^7y^2 - y^4$ c) $x^6 + y^4$ d) $x^6 + 2x^3y^2 + y^4$

$$(x^3 + y^2)^2 = (x^3 + y^2)(x^3 + y^2)$$ كرر القوس مرتين

$$= x^6 + x^3y^2 + y^2x^3 + y^4$$
$$= x^6 + 2x^3y^2 + y^4$$

4. The x-intercept for the equation $2x - 3y = -12$ is: $\boxed{2}$

a) $(0, -9)$ b) $(0, 4)$ ⓒ $(-6, 0)$ d) $(-14, 0)$

x-intercept:

$y = 0$ تعني

$$2x - 3y = -12$$
$$2x - 3(0) = -12$$
$$2x - 0 = -12$$
$$2x = -12$$
$$x = -\frac{12}{2} = -6$$

$x = -6$
$y = 0$ $\Rightarrow (-6, 0)$

---

5. $Lcm(x^2 + 3x + 2, 2x + 4) = $:

ⓐ $2(x+1)(x+2)$ b) $4(2x+1)(x+5)$

c) $2(x-1)(x-3)$ d) $x+2$

$$x^2 + 3x + 2 = (x+2)(x+1)$$
$$2x + 4 = 2(x+2)$$

علم الاشتراك: 2 و $(x+1)$, $(x+2)$

الأسس الأكبر: 2^1 و $(x+1)^1$, $(x+2)^1$

$$\boxed{Lcm = 2(x+1)(x+2)}$$

6. $GCF(x^2+3x+2, 2x+4) = :$ 3

a) $2(x+1)(x+2)$ b) $2(x+2)$ c) $(x+2)^2$ **d)** $x+2$

$$x^2+3x+2 = (x+2)(x+1)$$
$$2x+4 = 2(x+2)$$

$(x+2)$ العامل المشترك:

$(x+2)^1$ الاس الاصغر

$\therefore GCF = (x+2)$

---

7. the solution set for the equation $(5x-4)(3x+2)=0$ is:

a) $\left\{\frac{3}{4}, -\frac{7}{5}\right\}$ b) $\left\{-\frac{4}{5}, \frac{2}{3}\right\}$ c) $\left\{\frac{5}{4}, -\frac{3}{2}\right\}$ **d)** $\left\{\frac{4}{5}, -\frac{2}{3}\right\}$

$$(5x-4)(3x+2) = 0$$

$$\begin{array}{c|c} 5x-4 = 0 & 3x+2 = 0 \\ 5x = 4 & 3x = -2 \\ x = \frac{4}{5} & x = -\frac{2}{3} \end{array}$$

$$\left\{\frac{4}{5}, -\frac{2}{3}\right\}$$

8. The scientific notation for the number 0.00000687 is :

a) 68.7×10^{-8} b) 0.687×10^{-6} c) 6.87×10^{7} d) 6.87×10^{-7}

مرك (.) لحش تكون
كل ساهما العدداوحدة

$0.000 000 687$

6.87×10^{-7} ← عدد المنازل التي تحركناها

اذا تحركنا لليمين : الاس سالب
اذا تحركنا لليسار : الاس موجب

---

9. 27 is 45% of what number ?

a) 1215   b) 58   c) 60   d) 72

27 is 45% of what number

(=) $\frac{45}{100} = 0.45$ (.)   x

27 = 0.45 . x

$X = \dfrac{27}{0.45} = 60$

---

10. which of the following is not a true statement :
عبارة صحيحة

a) $-7 < -7$ b) $-7 \geq -7$ c) $-7 = -7$ d) $-7 \leq -7$

$3 > -2 / -2 > 6 / -100 > 1$

$-2 > -5 / -1 > -100 / -50 > -2$

ملاحظة : الاعداد الموجب دائماً اكبر من السالب
الاعداد السالبة كلما قل العدد

اذا كان العددان متساويان نكتب : = او ≤ او ≥ بينهما

مثال : $5 \geq 5 / 5 \leq 5 / 5 \geq 5$

$x 5 > 5 / 5 < 5 x /$

11. One of the following is true : $\boxed{5}$

(a) $-\frac{2}{3} > \frac{5}{-6}$

b) $\frac{3}{4} < \frac{1}{2}$

c) $\frac{1}{-2} < \frac{-1}{2}$

d) $\frac{3}{6} = \frac{2}{5}$

ملاحظة رسم الكسور :
① يجب ان تكون اشارة السالب (−) في الاعلى
② اضرب ضرب تبادلي

a) $\frac{-2}{3} \times \frac{-5}{6}$ $-12 > -15$ ✓

b) $\frac{3}{4} \times \frac{1}{2}$ $6 \not< 4$ X

c) $\frac{-1}{2} \times \frac{-1}{2}$ $-2 < -2$ X

d) $\frac{3}{6} \times \frac{2}{5}$ $15 = 12$ X

12) The slope of the vertical line is: $\boxed{6}$

a) 0   b) 1   c) -1   Ⓓ Not defined

vertical : Slope undefined

horizontal : Slope = 0

---

13) $Lcm\left(x^2-25, (x+5)^2\right) = $:

a) $(x^2-25)(x+5)^2$ b) $x+5$ ⓒ $(x+5)^2(x-5)$ d) $(x-5)(x+5)$

$\overset{x}{2}\overset{5}{}$

$x^2-25 = \underline{(x-5)(x+5)}$

$(x+5)^2 = (x+5)(x+5) = \underline{(x+5)^2}$

$(x-5)(x+5)$ كل الاوضاع :

$(x-5)^1, (x+5)^2$ الاكبر اس :

$Lcm = (x-5)(x+5)^2$

---

14) $GrF\left(x^2-25, (x+5)^2\right) = $:

a) $(x^2-25)(x+5)^2$ b) $x+5$ c) $(x+5)^2(x-5)$ d) $(x-5)(x+5)$

$x^2-25 = (x-5)(x+5)$

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

$(x+5)$ الاوضاع المشترك :

$(x+5)^1$ الاس الاصغر :

$CCF = (x+5)$

15, The Solution set for the equation $x^2 = -9$

a) $\{-3, 3\}$ b) $\emptyset$ c) $\{-9, 9\}$ d) $\{-81, 81\}$

مثال آخر :

$-3x^2 = 27$

$x^2 = \frac{27}{-3}$

$x^2 = -9$

No Solution

$x^2 = -9$

$x = \pm\sqrt{-9} \rightarrow$

No Solution : $\emptyset$

$\frac{x^2 + 9}{x^2 + 9} = 0$ أ

Prime

No Solution

الأعداد السالبة
ولا قيمة

16. The Solution of $-x^2 = -9$ is :

a) $\{-3, 3\}$ b) $\emptyset$ c) $\{-9, 9\}$ d) $\{-81, 81\}$

$-x^2 = -9$

$x^2 = \frac{-9}{-1}$

$x^2 = 9$

$x = \pm\sqrt{9} = \pm 3$

17. The factorization of $-x^2 + 4$ is :

a) Prime   b) $(x+2)^2$ c) $(x-2)^2$ d) $-(x-2)(x+2)$

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

فك عامل مشترك (-)

$-(-2+x)(2+x) = -(x-2)(x+2)$

لأنه صار معكلمات

18. The opposite of $x-2$ is: 8

a) $-x-2$ b) $x+2$ c) $2-x$ d) $2x$

opposite:

اكبير السؤال علامة
(نغير بإشارة (-1

$-(x-2) = -x+2 = 2-x$

---

19. The reciprocal of $x-2$ is:

a) $x-2$ b) $2-x$ c) $\dfrac{1}{x-2}$ d) $\dfrac{1}{x} - 2$

$x-2 = \dfrac{x-2}{1}$

اقلب الكسر

$\boxed{\dfrac{1}{x-2}}$

---

20. The degree of the polynomial $7x^4 - x^5 + 16$ is:

a) 7   b) 16   c) 5   d) 4

degree: أكبر أس

21. One of the following ordered pairs is
a solution for the equation $y = \frac{1}{3}x - 2$:

a) $(3, -1)$ b) $(\frac{1}{3}, -2)$ c) $(-2, 0)$ d) $(1, -\frac{1}{3})$

كل هذا السؤال : يجب تعويض قيم x ثم قيم y
وتجريب جميع الخيارات (التي يجعل طرفي المعادلة
متشابهان) هو الحل الصحيح

a) $(3, -1)$: $y = \frac{1}{3}x - 2$
      x y

$-1 = \frac{1}{3}(3) - 2 \longrightarrow$ by calculater

$-1 = -1$ ✓

b) $(\frac{1}{3}, -2)$: $y = \frac{1}{3}x - 2$
      x y

$-2 = \frac{1}{3} \cdot \frac{1}{3} - 2 \longrightarrow$ by calculater

$-2 = -\frac{17}{9}$ X

c) $(-2, 0)$: $y = \frac{1}{3}x - 2$
      x y

$0 = \frac{1}{3}(-2) - 2 \longrightarrow$ by calculater

$0 = -\frac{8}{3}$ X

d) $(1, -\frac{1}{3})$: $y = \frac{1}{3}x - 2$
      x y

$-\frac{1}{3} = \frac{1}{3}(1) - 2 \longrightarrow$ by calculater

$-\frac{1}{3} = -\frac{5}{3}$ X

22) The result of $(x^3 - y^2)(x^3 + y^2)$ is:

a) $x^6 - y^4$ b) x^6 c) $2x^3 - 2y^2$ d) $2x^3$

$(x^3 - y^2)(x^3 + y^2) = x^6 + x^3 y^2 - y^2 x^3 - y^4$

$= x^6 - y^4$

---

23. The set of numbers for which the rational expression

$\dfrac{(x+5)(x-2)}{(x-1)(x+4)}$ is not defined.

a) $\{-1, 4\}$ b) $\{-2, 5\}$ c) $\{-4, 1\}$ d) $\{-5, 2\}$

nob defined : معناه = القيمة

$(x-1)(x+4) = 0$

$x-1 = 0 \ | \ x+4 = 0$

$x = 1 \quad \quad x = -4$

---

24. The solution of $2(x-3) = 2x - 6$ is:

a) all real numbers   b) $\emptyset$ c) 2   d) 3

$2(x-3) = 2x - 6$

$2x - 6 = 2x - 6$

$2x - 2x = -6 + 6$

all real numbers $\boxed{0 = 0}$

25) The Solution of $2(x-3) = 2x-3$ is:

a) all real numbers   b) -3   c) 2   **d)** $\emptyset$

$$2(x-3) = 2x-3$$
$$2x - 6 = 2x-3$$
$$2x - 2x = -3+6$$
$$0 = 3$$

No Solution $\leftarrow$ $\emptyset$

26. $GCF(x^2, x^2-1) = :$

a) x^2 b) $x^2(x^2-1)$ c) 0   **d)** 1

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

العوامل المشتركة: لا يوجد
$$GCF = 1$$

27. $LCM(x^2, x^2-1) = :$

a) x^2 b) $x^2(x^2-1)$ c) 0   d) 1

$x, (x-1), (x+1)$ جميع العوامل
$x^2, (x-1)', (x+1)'$ الأسس الأكبر

$$Lcm = x^2(x-1)(x+1)$$
$$= x^2(x^2-1) = x^4 - x^2$$

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

28) The result of $(x-2y)^2 - 4y^2$ is: [12]

a) $x^2 - 4xy + 8y^2$ b) x^2 c) $x^2 - 4xy$ d) $x^2 - 8y^2$

method 1 : ∠

$(x-2y)^2 - 4y^2$

$x^2 - 4xy + 4y^2 - 4y^2$

$= \boxed{x^2 - 4xy}$

$(x-2y)^2$

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

$x^2 - 2xy - 2xy + 4y^2$

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

method 2 : $(x-2y)^2 - 4y^2$

$(x-2y)$ $2y$

$[(x-2y) - 2y][(x-2y) + 2y]$

$(x-2y-2y)(x-2y+2y)$

$(x-4y)(x) = x(x-4y) \longrightarrow$ factorization

$\underline{x^2 - 4xy}$

29. If 25% of what number is 10, then 65% of the same number is :

a) 20   b) 10   c) 26   d) 40

1) : $0.25 (x) = 10$

$x = \dfrac{10}{0.25} = 40$

$25\% = \dfrac{25}{100}$

$= 0.25$

2) $0.65 (40) = 26$

$65\% = \dfrac{65}{100} = 0.65$

---

30. the interval notation for the set

$\{ x \mid x \geq 2 \}$ is :

a) $(2, \infty)$ b) $[-2, 2]$ c) $(-\infty, 2]$ d) $[2, \infty)$

$x > $ number : (number, ∞)

$x \geq $ number : $[\text{number}, \infty)$

$x < $ number : $(-\infty, \text{number})$

$x \leq $ number : $(-\infty, \text{number}]$

$x > 2$ $(2, \infty)$ $x > -2$ $(-2, \infty)$

$x \geq 2$ $[2, \infty)$ $x \geq -2$ $[-2, \infty)$

$x < 2$ $(-\infty, 2)$ $x < -2$ $(-\infty, -2)$

$x \leq 2$ $(-\infty, 2]$ $x \leq -2$ $(-\infty, -2]$

31. The slope of the line $y = 2 - 3x$ is: $\boxed{14}$

1. 2   b) 3   ⓒ -3   d) 0

Slope I   معامل x

$y = 5 + 3x$: slope $= 3$

$y = \dfrac{2 - x}{4}$: slope $= -\dfrac{1}{4}$

$y = \dfrac{3}{2}x - 1$: slope $= \dfrac{3}{2}$

$2x + 3y = 5$ معرفة ال slope

منفصل ال y لوحده ونرد الباقي للين

$3y = 5 - 2x$

$y = \dfrac{5 - 2x}{3}$ slope $= \boxed{\dfrac{-2}{3}}$

32. The slope of the line $x = 2 - 3y$ is

a) -3   b) 2   c) $\dfrac{1}{3}$ ⓓ $-\dfrac{1}{3}$

$x = 2 - 3y$

$3y = 2 - x$ $y = \dfrac{2 - x}{3}$ slope $= -\dfrac{1}{3}$

32.

ممكن هذا أختلاف ال slope

$$y = 3x + 2 \implies slope = 3$$

معامل x

$$x = 3y + 2 \qquad slope \neq 3$$

يجب جعل y كدائر السؤال

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

$$y = \frac{2-x}{-3} \qquad slope = \frac{-1}{-3} = +\frac{1}{3}$$

33. $(-5x^3 y^5 z^2)^4 =$

(a) $625 x^{12} y^{30} z^8$ b) $20 x^7 y^9 z^6$ c) $-625 x^{12} y^{20} z^8$

d) $-20 x^7 y^9 z^6$

الحاسم 0

$$(-5x^3 y^5 z^2)^4 = (-5)^4 x^{12} y^{20} z^8$$

$$= 625 x^{12} y^{20} z^8$$

م ١ أضرب الاسس

ح لاتنسى وضع القوسين

الاقواس.

34. One of the following is a vertical line : [16]

a) $y = 4$ b) $y = 2x - 1$ c) $y = x$ d) $x = -3$

Vertical line : يصير فيه X فقط

horizontal line : يصير فيه y فقط

---

35. The translation of " two hundreds less than the product of two numbers " is :

a) $200 - xy$ b) $200xy$ c) $xy - 200$ d) $xy + 200$

xy : طبعا less ياتي أولا الا

200 : طايله فيه less ياتي اخيرا

$xy - 200$

36. The Set of number for which [17]
the rational expression $\dfrac{x-8}{x^2-25}$ is not defined:

a) $\{-25, 25\}$ b) $\{-12.5, 12.5\}$ c) $\{-5, 5\}$ d) $\{8\}$

not defined : المقام يساوي صفر

$$x^2 - 25 = 0$$
$$x^2 = 25$$
$$x = \pm\sqrt{25} = \pm 5$$

---

37. One of the following is a perfect square :

a) $x^2 + 5x + 4$ b) $x^2 - 5x + 1$ c) $x^2 + 4$ d) $x^2 + 6x + 9$

perfect square : [جذر الحد الاول × جذر الحد الاخير × 2 = الحد الاوسط] ٣ حدود

a) $x^2 + 5x + 4$: $\sqrt{x^2} = x$ / $\sqrt{4} = 2$ / $2 \cdot x \cdot 2 = 4x$ / (الحد الاوسط 5x)

الجواب $\times$

b) $x^2 - 5x + 1$: $\sqrt{x^2} = x$ / $\sqrt{1} = 1$ / $2 \cdot x \cdot 1 = 2x$ / الحد الاوسط (5x)

الجواب $\times$

c) $x^2 + 4$: حدّان فقط   الجواب خطأ

d) $x^2 + 6x + 9$: $\sqrt{x^2} = x$ / $\sqrt{9} = 3$ / $2 \cdot x \cdot 3 = 6x$

الحد الاوسط 6x

✓

38. The fraction $\frac{y}{9x}$ is equivalent to $\frac{7}{9}$ ⌊١٠⌋

when $y =$

a) 7   b) 9   c) 7x   d) 9x

equivalent :   تساوي

$$\frac{y}{9x} = \frac{7}{9} \quad : \quad 9y = 63x$$

$$y = \frac{63x}{9} = 7x$$

---

39. what percent of 125 is 30 ?

a) 24%   b) 45%   c) 4.17%   d) 24%

$$\frac{x}{100} \cdot 125 = 30$$

$$\frac{125}{100} x = 30$$

$$\quad\quad\quad\quad\quad\quad Calculator$$

$$x = 30 \div \frac{125}{100} = 24$$

I Solve the following equations :

① $2x^2 - 8 = 0$

method 1 : $2(x^2 - 4) = 0$

$2(x-2)(x+2) = 0$

$\cancel{2 = 0}$ | $x - 2 = 0$ | $x + 2 = 0$
$\cancel{x}$ | $\underline{x = 2}$ | $\underline{x = -2}$

S. S : $\{-2, 2\}$

method 2 :

$2x^2 = 8$

$x^2 = \dfrac{8}{2}$

$\boxed{x^2 = 4}$

$x = \pm\sqrt{4} = \pm 2$

② Solve $3x^2 - x - 4 = 0$

$(3x - 4)(x + 1) = 0$

$3x - 4 = 0$ | $x + 1 = 0$

$3x = 4$ | $x = -1$

$x = \dfrac{4}{3}$

S. S : $\left\{-1, \dfrac{4}{3}\right\}$

calculator mode ⇒ 5 ⇒ 3

$x_1 : \dfrac{4}{3}$ ⟶ $(3x - 4)$

$x_2 = -1$ ⟶ $(x + 1)$

③ Solve $6x^2 - 9x - 15 = 0$

لتكون استخدام Calculator مباشرةً
بسبب وجود عامل مشترك

$$3(2x^2 - 3x - 5) = 0$$
<u>استخدم Calculator</u>

$$3(2x - 5)(x + 1) = 0$$

	$x_1 = \dfrac{5}{2}$
$(2x - 5)$	
	$x_2 = -1$
$(x + 1)$	

$3 = 0$ | $2x - 5 = 0$ | $x + 1 = 0$
$\cancel{x}$ | $2x = 5$ | $\underline{x = -1}$
| $\underline{x = \dfrac{5}{2}}$ |

$$S.S : \left\{ \dfrac{5}{2} , -1 \right\}$$

───────────────

④ Solve $x^2 - 2x = 2x^2 + 4x + 9$

$$\underline{\underline{x^2}} - \underbrace{2x} - \underline{\underline{2x^2}} - \underbrace{4x} - 9 = 0$$

$$-x^2 - 6x - 9 = 0$$

$$x^2 + 6x + 9 = 0$$

$$(x + 3)(x + 3) = 0$$

$$x + 3 = 0$$

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

في حال كان معامل
x^2 سالب
اضرب الكل بـ سالب
(غير اشارات كل الحدود)

─────

Calculator

$x = -3$

$(x + 3)$

⑤ Solve $(x-2)^2 - 25 = 0$

$$(x-2)^2 = 25$$

$$(x-2) = \pm\sqrt{25}$$

$$x-2 = \pm 5$$

$$x = 2 \pm 5$$

$$x = 2 - 5 = -3$$

$$x = 2 + 5 = 7$$

S.S : $\{-3, 7\}$

⑥ Solve $3(x+1)^2 = 27$

$$(x+1)^2 = \frac{27}{3} = 9$$

$$x+1 = \pm\sqrt{9}$$

$$x+1 = \pm 3$$

$$x = -1 \pm 3$$

$$x = -1 + 3 = 2$$

$$x = -1 - 3 = -4$$

S.S : $\{-4, 2\}$

⑦ $3x^3 - 27x = x^2 - 9$

$3x^3 - 27x - x^2 + 9 = 0$

$3x(x^2 - 9) - 1(x^2 - 9) = 0$

$(x^2 - 9)(3x - 1) = 0$

$(x - 3)(x + 3)(3x - 1) = 0$

$x - 3 = 0$	$x + 3 = 0$	$3x - 1 = 0$
$x = 3$	$x = -3$	$3x = 1$
		$x = \frac{1}{3}$

S.S : $\{3, -3, \frac{1}{3}\}$

2. Factor the following:

① $6x^2 + x - 2$ (ac-method)

$$6x^2 + 4x - 3x - 2$$

$$2x(3x+2) - 1(3x+2)$$

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

$$ac : -12$$
$$b : +1$$

$\frac{a}{1}$	$\frac{b}{1}$	$\frac{c}{-12}$

$$-4, 3$$
او عكسها
$$4, -3$$

---

② $6x^2 - 4x - 2$ (ac-method)

اولاً نأخذ عامل مشترك

$$2(3x^2 - 2x - 1)$$

الآن نستخدم الـ Calculator
o-c method

$$\boxed{2(x-1)(3x+1)}$$

$3x^2 - 2x - 1$

mode $\Rightarrow 5 \Rightarrow 3$

$\frac{a}{3}$	$\frac{b}{-2}$	$\frac{c}{-1}$

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

$$(x-1) \qquad (3x+1)$$

$\underline{\text{ac}}$:

$$6x^2 - 4x - 2$$

$$2(3x^2 - 2x - 1)$$

$$= \boxed{2(x-1)(3x+1)}$$

$3x^2 - 2x - 1$	$ac : -3$
6	$b : -2$
$3x^2 - 3x + x - 1$	$-3, 1$
$3x(x-1) + 1(x-1)$	
$(x-1)(3x+1)$	

$$xy - x - y^2 + y$$

(Grouping)

$$x(y-1) - y(y-1)$$

$$(y-1)(x-y)$$

$$2x^3y^2 + 10x^2y^2 + 12xy^2$$

(عوامل مشتركة)

$$2xy^2(x^2 + 5x + 6)$$

$$2xy^2(x+2)(x+3)$$

③ Simplify the following Expressions.

① $\dfrac{x^2-4}{x^2-5x+6}$ · $\dfrac{x^2-6x+9}{x^2+2x}$ → calculator

calculator

(factoring) حل بطريقة مشترك

$\dfrac{(x-2)(x+2)}{(x-2)(x-3)}$ · $\dfrac{(x-3)(x-3)}{x(x+2)}$ = $\boxed{\dfrac{x-3}{x}}$

② $\dfrac{x^2-9}{25x^2-4}$ · $\dfrac{2-5x}{27-3x}$ → 0

كامل مشترك

$\dfrac{(x-3)(x+3)}{(5x-2)(5x+2)}$ · $\dfrac{(2-5x)}{3(9-x^2)}$

للمطابق

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

$\dfrac{2-5x}{5x-2} = -1$

$= \dfrac{-1}{\dfrac{(x-3)(x+3)}{(5x-2)(5x+2)}}$ · $\dfrac{\overset{-1}{(2-5x)}}{3(3-x)(3+x)}$

$= \dfrac{-1 \cdot -1}{(5x+2)\cdot 3}$ = $\dfrac{1}{3(5x+2)}$

③

$$\frac{9x^2-1}{x^2-2x+1} \div \frac{2-6x}{x^3-x}$$

حول (÷) الى (.)

واقلب الكسر الموجود بعد (÷)

$$\frac{\overset{3x}{9x^2-1}}{x^2-2x+1} \cdot \frac{x^3-x}{2-6x}$$

بلا تشكيل

بلا تشكيل

Calculator

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

$$= \frac{(3\overset{-1}{\cancel{x-1}})(3x+1)}{(\cancel{x-1})(x-1)} \cdot \frac{x(\cancel{x-1})(x+1)}{2(1-3x)}$$

$$= \boxed{\frac{-x(3x+1)(x+1)}{2(x-1)}}$$

④ معادل نقد

$$\frac{3x^2 - 27}{-x^2 - x} \div \frac{x^2 - 6x + 9}{2x^2 + 4x + 2}$$ → Calc

كامل تفكيك ← (top right)

معادل نقد (left)

$$\frac{3(x^2 - 9)}{-x(x+1)} \cdot \frac{2(x^2 + 2x + 1)}{(x-3)(x-3)}$$ → Calc

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

$$= \frac{2 \cdot 3 \cdot (x+3)(x+1)}{-x(x-3)} = \boxed{\frac{6(x+3)(x+1)}{-x(x-3)}}$$

⑤

$$\frac{(x+1)^2}{(x-1)^2} \cdot \frac{x^2 - 1}{x^2 + 1}$$ → Prime

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

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

4 $x^3 = x^5$

$x^3 - x^5 = 0$

$x^3(1-x^2) = 0$

$x^3(1-x)(1+x) = 0$

$x^3 = 0$ | $1-x = 0$ | $1+x = 0$

$x = 0$ | $1 = x$ | $x = -1$

S.S : $\{0, 1, -1\}$

5 $3(x-2)^2 = 0$

$3 = 0$ | $(x-2)^2 = 0$

$x - 2 = 0$

$x = 2$

S.S : $\{2\}$

$x^4 - 16 = 0$

$x^2 \quad 4$

$(x^2 - 4)(x^2 + 4) = 0$ S.S : $\{-2, 2\}$

$x \quad 2$ Prime

$(x-2)(x+2)(x^2+4) = 0$

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

$x = 2$ | $x = -2$ | ✗