

Part II: choose the correct answer.

1- Which of the following is a rational number ?

- a) $\sqrt{3}$ b) $1.\overline{42}$ c) 0.15673298 d) π
- Natural Integers rational irrational
- 1, 2, 3,, -2, -1, 0, 1, 2, ... $\frac{1}{2}, \frac{3}{2}, \frac{2}{1}$
0.5
0.131313..... $\frac{e}{\sqrt{2}}$
0.12735.....

2- Express the number $0.\overline{36}$ as a rational number.

- a) $\frac{35}{99}$ b) $\frac{9}{25}$ c) $\frac{4}{11}$ d) $\frac{5}{11}$
- $0.36 = 0.363636\ldots$
 $x = 0.363636\ldots$
 $100x = 36.363636\ldots$
 $99x = 36 \Rightarrow x = \frac{36}{99} = \frac{4}{11}$
- ① أفرس الرقم x
② أضرب بـ 100 إذا كان عشري
رسمنا بقدر الفاصلة
③ أخرج ① من ②

3- Express the number $1.\overline{27}$ as a rational number.

- a) $\frac{127}{99}$ b) $\frac{127}{100}$ c) $\frac{14}{11}$ d) $\frac{21}{15}$
- $1.27 = 1.272727\ldots$
 $x = 1.272727\ldots$
 $100x = 127.2727\ldots$
 $99x = 126 \Rightarrow x = \frac{126}{99} = \frac{14}{11}$

4- Express the number $0.\overline{18}$ as a rational number.

- a) $\frac{17}{99}$ b) $\frac{9}{50}$ c) $\frac{3}{11}$ d) $\frac{2}{11}$
- $0.18 = 0.181818\ldots$
 $x = 0.181818\ldots$
 $100x = 18.1818\ldots$
 $99x = 18 \Rightarrow x = \frac{18}{99} = \frac{2}{11}$

5- Which of the following is true?

a) $1.\overline{3}$ is an integer. **X**

b) $x^3 - 2x^{\frac{1}{2}} + 1$ is a polynomial of degree 3. **X**

c) $\frac{5x^2 - 3x^3}{6x^2 - 3x^4} = \frac{1}{12} \Rightarrow \frac{10}{12} - \frac{9}{12} = \frac{10-9}{12} = \frac{1}{12}$

d) $\frac{1 - \frac{2}{y}}{\frac{3}{y} - 1} = \frac{y^2 - 2}{3 - y^2}$

6- Compute $\sqrt{18} + \sqrt{32}$

a) $7\sqrt{2}$

b) 14

c) $\sqrt{2}$

d) $12\sqrt{2}$

$$\begin{aligned}\sqrt{9 \times 2} + \sqrt{16 \times 2} &= \sqrt{9} \sqrt{2} + \sqrt{16} \sqrt{2} \\ &= 3\sqrt{2} + 4\sqrt{2} = 7\sqrt{2}\end{aligned}$$

7- Simplify $\sqrt{12} + \sqrt{75}$.

a) $7\sqrt{3}$

b) $5\sqrt{2}$

c) $6\sqrt{2}$

d) $9\sqrt{3}$

$$\begin{aligned}\sqrt{3 \times 4} + \sqrt{25 \times 3} &= \sqrt{3} \sqrt{4} + \sqrt{25} \sqrt{3} \\ &= 2\sqrt{3} + 5\sqrt{3} = 7\sqrt{3}\end{aligned}$$

8- Compute $\sqrt{18} + 5\sqrt{8} - \sqrt{50}$.

a) $8\sqrt{2}$

b) $-2\sqrt{6}$

c) $-7\sqrt{2}$

d) $12\sqrt{2}$

$$\begin{aligned}\sqrt{9 \times 2} + 5\sqrt{4 \times 2} - \sqrt{25 \times 2} &= 3\sqrt{2} + 5(2\sqrt{2}) - 5\sqrt{2} \\ &= 3\sqrt{2} + 10\sqrt{2} - 5\sqrt{2} = 8\sqrt{2}\end{aligned}$$

9- $\sqrt[3]{8} \sqrt{x} =$

a) $2\sqrt[6]{x}$

b) $2\sqrt{x}$

c) $2|x|$

d) $\sqrt[6]{8x}$

$$\begin{aligned}\sqrt[3]{8} \cdot \sqrt{x} &= 2 \cdot \sqrt{x} \\ &= 2\sqrt{x}\end{aligned}$$

المزور الزرجية = صطلق

10- Simplify $\sqrt{4x^4 + 16x^2} = \sqrt{4x^2(x^2+4)}$

أوزن الضرب لأن الكلافة سيقم ضرب

a) $4|x|\sqrt{x^2+4}$

b) $4x\sqrt{x^2+4}$

c) $2x^2 + 4x$

d) $2|x|\sqrt{x^2+4}$

$$= \sqrt{4x^2} \sqrt{x^2+4}$$

$$= 2|x|\sqrt{x^2+4}$$

11- Simplify $\sqrt[4]{16x^8y^5} = \sqrt[4]{16} \cdot \sqrt[4]{x^8} \cdot \sqrt[4]{y^5}$

a) $4x^2|y|\sqrt[4]{y}$

b) $2x^2y$

c) $4x^4y^2$

d) $2x^2y\sqrt[4]{y}$

$$= 2 \cdot x^2 |y| \sqrt[4]{y}$$

12- Rationalize the numerator of $\frac{\sqrt{3+x}-2}{x-1}$

$$\frac{\sqrt{3+x}+2}{\sqrt{3+x}+2}$$

a) $\frac{2}{x-1}$

b) $\frac{\sqrt{3+x}+2}{x^2+1}$

c) $\frac{1}{\sqrt{3+x}+2}$

d) $\frac{\sqrt{3+x}+2}{x+1}$

$$\frac{(\sqrt{3+x}-2)(\sqrt{3+x}+2)}{(x-1)(\sqrt{3+x}+2)} = \frac{3+x-4}{(x-1)(\sqrt{3+x}+2)} = \frac{x-1}{(x-1)(\sqrt{3+x}+2)}$$

$$= \frac{1}{\sqrt{3+x}+2}$$

13- Rationalize the numerator of $\frac{\sqrt{3}+\sqrt{5}}{2}$

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

a) $\frac{2}{\sqrt{3}+\sqrt{5}}$

b) $\sqrt{3} + \sqrt{5}$

c) $\frac{-1}{\sqrt{3}-\sqrt{5}}$

d) $\frac{1}{\sqrt{3}-\sqrt{5}}$

$$= \frac{3-5}{2(\sqrt{3}-\sqrt{5})} = \frac{-2}{2(\sqrt{3}-\sqrt{5})} = \frac{-1}{\sqrt{3}-\sqrt{5}}$$

14- Rationalize the denominator of $\frac{6}{\sqrt{5}-\sqrt{2}}$. $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}}$

a) $2\sqrt{5} - \sqrt{2}$

b) $2\sqrt{5} + 2\sqrt{2}$

c) $2\sqrt{5} + \sqrt{2}$

d) $2\sqrt{5} - 2\sqrt{2}$

$$= \frac{6(\sqrt{5}+\sqrt{2})}{5-2} = \frac{6(\sqrt{5}+\sqrt{2})}{3} = 2\sqrt{5} + 2\sqrt{2}$$

15- Simplify the expression $(\sqrt{y} + \sqrt{2})(\sqrt{y} - \sqrt{2}) - (y + 4)$.

a) -6

b) $2\sqrt{y} - 8$

c) $2y$

d) 0

$$= [y - \cancel{\sqrt{y}\sqrt{2}} + \cancel{\sqrt{y}\sqrt{2}} - 2] - (y+4)$$

$$= \cancel{y} - 2 - \cancel{y} - 4 = -6$$

16- Compute $(-32)^{\frac{2}{5}}$ $\xrightarrow{\text{الأس}} \frac{2}{5}$ $\xrightarrow{\text{الجذر}}$

a) -4

b) 4

c) $-\frac{1}{4}$

d) $\frac{1}{4}$

$${}^5\sqrt{(-32)^2} = (-2)^2 = 4$$

$\xrightarrow{\text{الأس}} \frac{2}{5}$ $\xrightarrow{\text{الجذر}}$ $\xrightarrow{\text{يلتقي الإشارة}} \text{الأسبة}$

17- Simplify $\left(\frac{2y}{5x^{-1}}\right)^2 \left(\frac{2x}{y}\right)^{-1}$

a) $\frac{4y}{25x}$

b) $\frac{2xy^3}{25}$

c) $\frac{2y^3}{5x^2}$

d) $\frac{2x^2}{15x}$

$$= \left(\frac{2yx}{5}\right)^2 \left(\frac{y}{2x}\right)$$

$$= \frac{4y^2x^2}{25} \cdot \frac{y}{2x} = \frac{2y^3x}{25}$$

إذا اُحد من نفس الآخر
بإشارة مختلفة = 1

18- Simplify $y^{\frac{-2}{3}} (y^{\frac{5}{3}} - y^{\frac{2}{3}})$.

a) $y^{\frac{2}{3}} - 1$

b) $y - 1$

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

d) y^2

$$= y^{-\frac{2}{3} + \frac{5}{3}} - 1 = y^1 - 1 = y - 1$$

19- Simplify $\left(\frac{x^2 y^{-4}}{3 x^{-3} y}\right)^{-2}$.

a) $\frac{y^{10}}{9x^{10}}$

b) $\frac{9x^{10}}{y^{10}}$

c) $\frac{9y^{10}}{x^{10}}$

d) $\frac{9y^{10}}{x^5}$

$$= \left(\frac{3x^{-3}y}{x^2y^{-4}}\right)^2 = \left(\frac{3y^5}{x^5}\right)^2 = \frac{9y^{10}}{x^{10}}$$

20- Simplify $\frac{(2a^{-2}b)^4(ab)^{-3}}{a^{-4}}$

a) $\frac{8}{a^7b}$

b) $\frac{16b}{a^7}$

c) $\frac{a}{8b^7}$

d) $\frac{a^7b}{16}$

$$\frac{(2a^{-2}b)^4 a^4}{(ab)^3} = \frac{(2)^4 a^{-8} b^4 a^4}{a^3 b^3} = \frac{16 b^4 a^4}{a^3 a^3 b^3} = \frac{16 b^4 a^4}{a^6 b^3}$$

$$= \frac{16b}{a^2}$$

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

a) $x y^5$

b) $\frac{y}{x^4}$

c) $\frac{x^4}{y}$

d) $\frac{y^5}{x}$

$$(x^6 y^2) \cdot \frac{1}{x^2 y^3} = \frac{x^4}{y}$$

إذا كنتي مطلق
أهل داخل بيتك برا

- 22- Find the exact value of $|2 - |-12||$.
 a) 10 b) -10 c) 14 d) 24

$$|2 - 12| = |-10| = 10$$

ماذا كان المطلق سالب

أعكس إشارات الأعداد

أقل $\sqrt{5}$ من 7

- 23- Simplify the expression $\sqrt{5} - |\sqrt{5} - 7|$.

- (a) 7 (b) $2\sqrt{5}$ (c) $2\sqrt{5} + 7$ (d) $2\sqrt{5} - 7$

$$\begin{aligned} &= \sqrt{5} - (7 - \sqrt{5}) \\ &= \sqrt{5} - 7 + \sqrt{5} \\ &= 2\sqrt{5} - 7 \end{aligned}$$

- 24- Simplify $\frac{\frac{2}{3} - \frac{1}{2}}{\frac{5}{3} + \frac{2}{9}}$.

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

$$\begin{aligned} &\text{بسط} \left(\frac{\frac{8-1}{20}}{\frac{12+9}{40}} \right) = \frac{\frac{7}{20}}{\frac{21}{40}} = \frac{7 \cdot 40}{20 \cdot 21} = \frac{2}{3} \end{aligned}$$

- 25- Simplify $\frac{\frac{1}{a+1} - \frac{1}{a-1}}{\frac{1}{a} - \frac{1}{a+1}}$.

a) $\frac{1}{a^2 - 1}$

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

c) $\frac{1}{a+1}$

d) $\frac{-1}{a^2 - 1}$

$$= \frac{-1(a)}{a(a+1)(a-1)} = \frac{-1}{a^2 - 1}$$

أوجد المقامات

26- Simplify $\frac{x}{x-1} - \frac{3}{x} \cdot \frac{(x-1)}{(x-1)}$

a) $\frac{x^2-3x+3}{x^2-x}$

b) $\frac{x-2}{x-1}$

c) $\frac{3}{x-1}$

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

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

27- Simplify $\frac{1}{x-3} \cdot \frac{(x+3)}{(x+3)} - \frac{6}{x^2-9} \Rightarrow (x-3)(x+3)$

a) $\frac{1}{x-3}$

b) $\frac{1}{x+3}$

c) $\frac{-1}{x+3}$

d) $\frac{-1}{x-3}$

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

نحولها ضرب ونقلب الكسر الثاني

28- Simplify $\frac{x^2-25}{2x+6} \div \frac{x^2-3x-10}{x^2+5x+6}$

a) $\frac{x-5}{2}$

b) $\frac{x+5}{2(x-1)}$

c) $\frac{x+5}{2}$

d) $\frac{x-5}{3(x+6)}$

$$= \frac{x^2-25}{2x+6} \cdot \frac{x^2+5x+6}{x^2-3x-10}$$

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

29- Simplify $\frac{x^2-2x-3}{2x^2+6x} \div \frac{x-3}{x+3}$.

a) $\frac{2x}{x+1}$

b) $\frac{x+1}{2x}$

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

d) $\frac{2x}{x-1}$

$$= \frac{x^2-2x-3}{2x^2+6x} \cdot \frac{x+3}{x-3}$$

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

30- Simplify the expression $(x+2)^3 - x^3 - 8$

a) $6x^2 + 12x$

b) 0

c) $3x^2 + 2x$

d) $6x^2 + 4x$

$$= (x^3 + 6x^2 + 12x + 8) - x^3 - 8$$

$$= 6x^2 + 12x$$

كعب مجموع هدين

31- Factor the expression $x^3 - 3x^2 + 4x - 12$.

a) $(x^2 + 4)(3x - 1)$

b) $(x^2 + 3)(x - 4)$

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

d) $(x^2 + 4)(x - 3)$

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

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

$$w = a+1$$

دائماً نرض القوس ١ (لأ)

32- Factor the expression $(a+1)^2 - 4(a+1) - 12$

a) $(a-2)(a+6)$

b) $(a-3)(a-12)$

c) $(a-6)(a+4)$

d) $(a-5)(a+3)$

$$(w-6)(w+2) = (a+1-6)(a+1+2)$$

$$= (a-5)(a+3)$$

33- Factor the expression $x^3 - 3x^2 - 9x + 27$.

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

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

c) $(x - 3)(x + 3)(x - 9)$

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

$$\begin{aligned} &= x^2(x - 3) - 9(x - 3) \\ &= (x - 3)(x^2 - 9) \\ &= (x - 3)(x - 3)(x + 3) \end{aligned}$$

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

34- Simplify $(3 - 2i)(1 + i)$, where $i = \sqrt{-1} \Rightarrow i^2 = -1$

a) $1 + i$

b) $5 + i$

c) $3 - i$

d) $1 + 5i$

$$= 3 + 3i - 2i - 2i^2$$

$$= i + 5$$

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

$$= 3 + i + 2$$

35- Simplify $(-6 + 6i) + 3i(1 - 2i)$ where $i = \sqrt{-1} \Rightarrow i^2 = -1$

a) $-3 + 3i$

b) $12 + 9i$

c) 0

d) $9i$

$$= -6 + 6i + 3i - 6i^2$$

$$= -6 + 9i - 6(-1)$$

$$= -6 + 9i + 6 = 9i$$

36- Simplify $(2 + 3i)(5 + 2i)$, where $i = \sqrt{-1} \Rightarrow i^2 = -1$

a) $-6 + 19i$

b) $5 + i$

c) $4 + 19i$

d) $4 - 5i$

$$= 10 + 4i + 15i + 6i^2$$

$$= 10 + 19i + 6(-1)$$

$$= 10 + 19i - 6 = 4 + 19i$$

37- Simplify $\frac{-2+4i}{3i}$, where $i = \sqrt{-1}$.

a) $\frac{-2}{3} + \frac{4}{3}i$

b) $\frac{4}{3} + \frac{2}{3}i$

c) $\frac{2}{3} - \frac{4}{3}i$

✓ d) $\frac{4}{3} - \frac{2}{3}i$

$$= \frac{-2}{3i} + \frac{4i}{3i}$$

$$= \frac{-2}{3i} + \frac{4}{3}$$

38- $\frac{x^2+x-2}{x^3-1} =$

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

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

✓ c) $\frac{x+2}{x^2+x+1}$

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

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

عكس الإشارة

أوجد الختامات

39- Simplify $\frac{5(2x-3)}{(2x-3)^2} + \frac{3}{(2x-3)^2}$.

✓ a) $\frac{10x-12}{(2x-3)^2}$

b) $\frac{10x}{(2x-3)^2}$

c) $\frac{2x-12}{(2x-3)^2}$

d) $\frac{2x-10}{(2x-3)^2}$

$$\frac{5(2x-3) + 3}{(2x-3)^2} = \frac{10x - 15 + 3}{(2x-3)^2} = \frac{10x - 12}{(2x-3)^2}$$

العلاقة بين الكريين هرب
نذكر عامل مشترك

40- Simplify $\frac{t-3}{t^2+9} \cdot \frac{t+3}{t^2-9}$

a) $\frac{1}{t^2+9}$

b) $\frac{t}{t-9}$

c) $\frac{t^2}{t^2+3}$

d) $\frac{-1}{t+3}$

$$\frac{\cancel{t-3}}{t^2+9} \cdot \frac{\cancel{t+3}}{(\cancel{t+3})(\cancel{t-3})} = \frac{1}{t^2+9}$$

المميز

41- Solve the equation $x^2 - 4x + 1 = 0$

a) $x = 4 \pm \sqrt{6}$

$ax^2 + bx + c = 0$
 $a=1, b=-4, c=1$

b) $x = -2 \pm 2\sqrt{3}$

c) $x = -2, x = 1$

d) $x = 2 \pm \sqrt{3}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(1)}}{2(1)}$$

$$= \frac{4 \pm \sqrt{16-4}}{2} = \frac{4 \pm \sqrt{12}}{2} = \frac{4 \pm 2\sqrt{3}}{2} = 2 \pm \sqrt{3}$$

42- Solve the equation $x^2 - 6x + 2 = 0$

$ax^2 + bx + c = 0$

a) $x = 3 \pm \sqrt{7}$

$a=1, b=-6, c=2$ b) $x = -3 \pm \sqrt{7}$

c) $x = -2, x = 3$

d) $x = 3 \pm 2\sqrt{7}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(2)}}{2(1)}$$

$$= \frac{6 \pm \sqrt{36-8}}{2} = \frac{6 \pm \sqrt{28}}{2} = \frac{6 \pm 2\sqrt{7}}{2} = 3 \pm \sqrt{7}$$

استخدم طريقة المقام

43- Solve the equation $\frac{2x-1}{x+2} = \frac{4}{5}$

a) $\frac{-5}{11}$

b) $\frac{13}{6}$

c) $\frac{-4}{5}$

d) $\frac{1}{2}$

باجاء X الكبير

$$5(2x-1) = 4(x+2)$$

$$10x - 5 = 4x + 8$$

$$10x - 4x = 8 + 5$$

$$6x = 13 \Rightarrow x = \frac{13}{6}$$

44- Find the solution of the equation $\frac{x^2}{2x+6} = \frac{1}{x+3}$

a) ± 1

b) ± 2

c) $\pm \sqrt{2}$

d) $-3, \pm 1$

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

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

$$2 = x^2 \Rightarrow x = \pm \sqrt{2}$$

أوجد المقامات

45- Find the solution of the equation $\frac{x+1}{2} - \frac{5x}{3} = 2 - x$

a) $\frac{9}{19}$

b) $\frac{19}{9}$

c) $\frac{22}{3}$

d) $\frac{9}{4}$

$$\frac{3(x+1) - 10}{6} = 2 - x$$

$$\frac{3x + 3 - 10}{6} = 2 - x$$

$$\frac{3x - 7}{6} = 2 - x$$

$$3x - 7 = 6(2 - x)$$

$$3x - 7 = 12 - 6x$$

$$3x + 6x = 12 + 7$$

$$9x = 19 \Rightarrow x = \frac{19}{9}$$

46- Find the distance between $\left(\frac{-5}{2}\right)$ and $\left(\frac{1}{3}\right)$

a) $\frac{17}{6}$

b) $\frac{13}{6}$

c) $\frac{11}{6}$

d) $\frac{5}{6}$

$$d = \left| \frac{1}{3} - \left(\frac{-5}{2}\right) \right| = \left| \frac{1}{3} + \frac{5}{2} \right| = \left| \frac{2+15}{6} \right| = \left| \frac{17}{6} \right|$$

$$\pi = 3.14$$

$$e = 2.7$$

- 47- Find the distance between π and 5
- a) 2π b) 15 c) $5 - \pi$ d) $\pi - 5$

$$d = |5 - \pi| = 5 - \pi$$

صانغ الأشارة

- 48- Find the solution set of the equation $x^{\frac{4}{3}} - 4x^{\frac{1}{3}} = 0$

- a) $\{-2, 0\}$ b) $\{-4, 0\}$ c) $\{0, 4\}$ d) $\{0, 2\}$

$$= x^{\frac{1}{3}} [x^{\frac{4}{3}} - 4] = 0$$

$$= x^{\frac{1}{3}} (x - 4) = 0$$

$$x^{\frac{1}{3}} = 0, \quad x - 4 = 0$$

$$x = 0, \quad x = 4$$

$$S = \{0, 4\}$$

- 49- Find the solution set of the equation $x + \sqrt{x+1} = 1$.

$$a) \{0\}$$

$$b) \{0, 3\}$$

$$c) \{3\}$$

$$d) \{-1, 1\}$$

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

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

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

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

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

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

$$x = 0$$

$$x - 3 = 0$$

$$x = 3$$

- خطوات حل الجذر
- ① أخلي الجذر بطرف بروفه
- ② أربع الطرفين
- ③ أفلي المعادلة مضربة
- ④ لازم اتحقق (أخون)

- 50- Find the solution set of the equation $|x - 5| = 3$.

$$a) \{0, 8\}$$

$$b) \{2, 8\}$$

$$c) \{-1, 2\}$$

$$d) \{-2, 1\}$$

$$x - 5 = 3$$

$$x = 3 + 5$$

$$x = 8$$

or

$$x - 5 = -3$$

$$x = -3 + 5$$

$$x = 2$$

$$S = \{2, 8\}$$

$$x \in [1, 2]$$

$$\begin{aligned} -1-5 < -3x < 2-5 \\ -6 < -3x < -3 \\ -2 < x < 1 \end{aligned}$$

$$a) (1, 2]$$

$$b) \left(\frac{4}{3}, \frac{7}{3}\right]$$

$$c) \left[\frac{-7}{3}, \frac{-4}{3}\right)$$

$$d) [1, 2]$$

53- Solve the linear inequality $-1 \leq 5 - 3x \leq 2$.

$$\begin{aligned} -1-5 &< 5x < 2-5 \\ -6 &< 5x < -3 \\ -\frac{6}{5} &< x < -\frac{3}{5} \end{aligned}$$

$$x \in \left[-\frac{6}{5}, -\frac{3}{5}\right)$$

$$a) \left[-\frac{21}{10}, \frac{5}{2}\right] \quad b) \left[-\frac{11}{5}, 0\right] \quad c) \left[-\frac{11}{5}, \frac{10}{3}\right] \quad d) \left[-\frac{11}{5}, \frac{1}{5}\right]$$

52- Solve the linear inequality $-25 \leq 5x+1 \leq \frac{2}{5}$.

$$\begin{aligned} \sqrt{2x+3} - (5)^2 &= 25 \\ 2x+3 &= 25 \\ 2x &= 25-3 \end{aligned}$$

$$2x = 22 \quad x = 11$$

$$d) \{-11\}$$

$$c) \{4\}$$

$$b) \{-4\}$$

$$a) \{11\}$$

51- Find the solution set of the equation $\sqrt{2x+3} - 5 = 0$

$$\sqrt{2(11)+3} - 5 = 0$$

54- Solve the linear inequality $\frac{1-2x}{x+2} \leq 0$.

a) $[-2, \frac{1}{2})$

b) $(-\infty, -\frac{1}{2}] \cup (2, \infty)$

c) $(\frac{1}{2}, -2)$

d) $(-\infty, -2) \cup [\frac{1}{2}, \infty)$

Zeroes
 أصفار البسط $1-2x=0$
 $\frac{1}{2} = \frac{2x}{2}$
 $x = \frac{1}{2}$
 أصفار المقام $x+2=0$
 $x = -2$

	$-\infty$	-2	$\frac{1}{2}$	∞
$1-2x$	+	+	-	-
$x+2$	-	+	+	+
$\frac{1-2x}{x+2}$	-	+	-	-

المختارة $>$ من العنفر (من العنفر) $x \in (-\infty, -2) \cup [\frac{1}{2}, \infty)$
 نبعت من تلت سالب

55- Find the values of x for which $|2x - 3| = 7$

a) $-5, 2$

b) $-2, 5$

c) $-\frac{5}{2}, 5$

d) $2, \frac{5}{2}$

$2x - 3 = 7$
 $2x = 7 + 3$
 $2x = \frac{10}{2}$
 $x = 5$

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

$-2, 5$

56- Find the values of x for which $|3x + 1| = 5$

a) $-2, 4$

b) $-4, 2$

c) $-\frac{4}{3}, 2$

d) $-2, \frac{4}{3}$

$3x + 1 = 5$
 $3x = 5 - 1$
 $3x = \frac{4}{3}$
 $x = \frac{4}{3}$

$3x + 1 = -5$
 $3x = -5 - 1$
 $3x = \frac{-6}{3}$
 $x = -2$

$-2, \frac{4}{3}$

57- Find the midpoint of the line segment between A(3, ^{x_1}
-4) and B(-1, ^{x_2} 7). ^{y_1} ^{y_2}

- a) $(2, \frac{-11}{2})$ b) $(1, \frac{3}{2})$ c) $(-2, \frac{11}{2})$ d) $(-1, \frac{-3}{2})$

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\ = \left(\frac{3 + (-1)}{2}, \frac{-4 + 7}{2} \right) = \left(\frac{2}{2}, \frac{3}{2} \right) = \left(1, \frac{3}{2} \right)$$

58- Find the x- and y-intercepts of the graph of the equation $y^2 - 2xy + 4x = 1$.

y-intercepts $\Rightarrow x=0$
 $y^2 - 0 + 0 = 1$
 $y = \pm\sqrt{1}$
 $y = \pm 1$

x-intercepts $\Rightarrow y=0$
 $0 - 0 + 4x = 1$
 $x = \frac{1}{4}$

- a) x-intercepts $\frac{1}{4}$ and y-intercepts ± 1 b) x-intercepts $\frac{1}{2}$ and y-intercepts 1, 2
 c) x-intercepts 3 and y-intercepts 1 d) x-intercepts $\frac{-1}{4}$ and y-intercepts ± 1

59- Find the x-intercept of the graph of the equation

$$y = \sqrt{x + 4}$$

- a) -4 b) 2 c) ± 2 d) no x-intercepts

$$(0)^2 = (\sqrt{x+4})^2 \\ x+4=0 \\ x=-4$$

60- Find the y-intercept, if any of the graph of the equation $y = \sqrt{x^2 - 9}$

$$y = \sqrt{-9} \quad \times \quad \text{No. intercept}$$

- a) $y = 9$ b) $y = \pm 3$ c) $y = 3$ d) no y-intercepts

Center
r²

61- Find an equation of the circle that has center $(-2, 1)$ and passes through the point $(4, 3)$.

a) $(x + 2)^2 + (y - 1)^2 = 2\sqrt{10}$

b) $(x + 2)^2 + (y - 1)^2 = 40$

c) $(x - 2)^2 + (y - 1)^2 = 40$

d) $(x - 4)^2 + (y - 3)^2 = 2\sqrt{10}$

$$\begin{aligned}(x-h)^2 + (y-k)^2 &= r^2 \\ (4-(-2))^2 + (3-1)^2 &= r^2 \\ (6)^2 + (2)^2 &= r^2 \\ 36 + 4 &= r^2 \\ 40 &= r^2\end{aligned}$$

معادلة الدائرة
 $(x+2)^2 + (y-1)^2 = 40$

62- Which of the following equations is symmetric with respect to the x-axis. $\Rightarrow y \rightarrow y^2, y^4$

a) $y = x^2 + x^6$

b) $x^2y^2 + xy = 3$

c) $y = x^3 + 5x$

d) $x = y^2 - y^4$

63- Which of the following equations is NOT symmetric with respect to the x-axis? $y \rightarrow y^2, y^4$

a) $x = y$

b) $x = \frac{1}{y^2}$

c) $x = |y|$

d) $x = y^6 - y^2$

Golden
Key

طريقة حل سريعة :-

① تماثل y-axis

أسس x زوجي
القيمة المطلقة
 x^2, x^4
 $|x|$

② تماثل x-axis

أسس y زوجي
القيمة المطلقة
 y^2, y^4
 $|y|$

③ تماثل origin

x فردي
 x, x^3

xy مفردين قيمتهم زوجي

$$2 = 1+1 = x^1 y^1$$

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

64- Which of the following equations has a graph

- symmetric about the y-axis?
- a) $y = x^3$ b) $y = x^2 - 3$ c) $y^2 + 2 = x$ d) $y = \sqrt{x}$

65- The graph represented by $y = x^2 + 2$ is:

- a) symmetric about the x-axis.
 b) symmetric about the y-axis.
 c) symmetric about the origin.
 d) none of the above is true.

هذا slope m

66- Find an equation of the line through the point (1, -5)

and has a slope $\frac{3}{2}$.

a) $3x - 2y - 13 = 0$

b) $3x - 2y - 8 = 0$

c) $3x - 2y - 17 = 0$

d) $2x - 3y - 17 = 0$

$$(y - y_1) = m(x - x_1)$$

$$(y - (-5)) = \frac{3}{2}(x - 1)$$

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

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

$$y = \frac{3}{2}x - \frac{3}{2} - 5$$

$$y = \frac{3}{2}x - \frac{13}{2}$$

$$2y = 3x - 13$$

$$3x - 2y - 13 = 0$$

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

$$y = \frac{2}{3}x - \frac{2}{3} - 5$$

$$y = \frac{2}{3}x - \frac{17}{3}$$

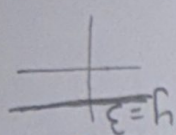
$$3y = 2x - 17$$

$$2x - 3y - 17 = 0$$

67- Find an equation of the line passes through the

point (1, 2) and perpendicular to the line $y = 3$.

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



68- Find an equation of the line passes through the point $(-1, 3)$ and perpendicular to the line $2x + y + 1 = 0$

a) $2x - y + 3 = 0$

b) $x + 2y - 5 = 0$

☒ c) $x - 2y + 7 = 0$

d) $2x + y - 1 = 0$

$Ax + By + C = 0$
 $2x + y + 1 = 0$
 $x - 2y + C = 0$

⊥

أقلب معاملات x و y
 أغير إشارة الحد الأوسط

69- If a graph is symmetric with respect to the $y = -y$ axis and if $(-8, -6)$ is on the graph, then which of the following points is also on the same graph?

a) $(-6, -8)$ b) $(8, 6)$ c) $(8, -6)$ ☒ d) $(-8, 6)$

ما يغير x فقط $-y = y$

70- The equation of a vertical line passes through $(2, -3)$ is

a) $x = -3$

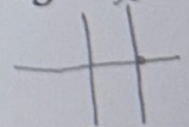
b) $y = 2$

☒ c) $x = 2$

d) $y = -3$

$x = 2$

Horizontal $\rightarrow y$

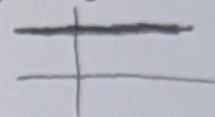


$$y =$$

71- Find the equation of the line that has slope 0.

- a) $x = 1$ ☒ b) $y = 2$ c) $x = y$ d) $x + y = 0$

Horizontal $m = 0$
eqn. $y = \dots$



72- Which of the following lines are parallel?

- a) $x + 3y + 1 = 0$ and $3x - y + 1 = 0$ ☒ $m_{L_1} = m_{L_2}$
 b) $2x + y + 2 = 0$ and $6x + 3y - 5 = 0$ ☒
 c) $x - 3y + 3 = 0$ and $3x - y + 4 = 0$ ☒
 d) $x = 2$ and $y = 2$

$$Ax + By + C = 0$$

$$m = -\frac{A}{B}$$