

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

تدريبات (١) للامتحان النهائي

Question 1: (30 points)

Choose the correct answer, write your answer in the table below:

1. The value of the expression $8x + y$ when $x = 2$, $y = 3$ is equal to:

a) 26

b) 48

~~c) 19~~

d) 16

2. The translation of “Four multiplied by some number” is:

a) $n + 4$

b) $\frac{4}{n}$

~~c) $4n$~~

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

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

a) 2

b) 3

c) -2

~~d) -3~~

4. One of the following ordered pair is a solution of the equation $2x - y = 4$:

a) (1,2)

b) (2,1)

~~c) (3,2)~~

d) (2,3)

5. The Linear function whose graph has the slope -3 and y -intercept $(0, 2)$, is:

a) $f(x) = -3x - 2$

b) $f(x) = -3x + 2$

c) $f(x) = 3x - 2$

d) $f(x) = 3x + 2$

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

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

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

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

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

7. The point $(2, -3)$ is located in quadrant:

a) I

b) II

c) III

d) IV

8. The scientific notation of the number 0.000723 is:

a) 7.23×10^{-4}

b) 7.23×10^{-3}

c) 723×10^{-4}

d) 723×10^{-3}

9. The set of numbers for which the rational expression $\frac{x}{(x+1)(x-3)}$ is not defined is:

a) $\{1, 3\}$

~~b) $\{-1, 3\}$~~

c) $\{1, -3\}$

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

10. The result of $a^4 \cdot a^3$ is :

a) 1

b) a^{12}

~~c) a^7~~

d) a

11. The x -intercepts of the equation $2y - 3x = 6$ is:

a) $(3, 0)$

b) $(2, 0)$

c) $(-3, 0)$

~~d) $(-2, 0)$~~

12. 40% of 20 is:

~~a) 8~~

b) 4

c) 6

d) 12

13. The domain of the function $f(x) = \frac{x}{x-2}$ is:

~~a)~~ $\{x \mid x \text{ is a real number and } x \neq 2\}$

b) $\{x \mid x \text{ is a real number and } x \neq -2\}$

c) $\{x \mid x \text{ is a real number and } x \neq 0\}$

d) $\{x \mid x \text{ is a real number and } x > 2\}$

14. The value of $f(x) = x^2 - 3x + 1$ when $x = 2$ is:

a) -2

b) 0

c) 1

~~d)~~ -1

15. The result of the division $\frac{4x^4 - 6x^3}{2x^2}$ is:

a) $4x^3 - 6x^2$

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

c) $4x^2 - 6x$

~~d)~~ $2x^2 - 3x$

16. The factorization of $25x^2 - 9$ is:

a) $(5x + 9)(5x - 9)$

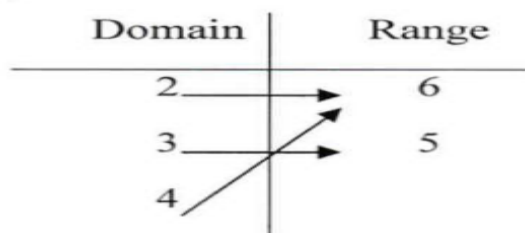
~~b)~~ $(5x + 3)(5x - 3)$

c) $(5x - 9)^2$

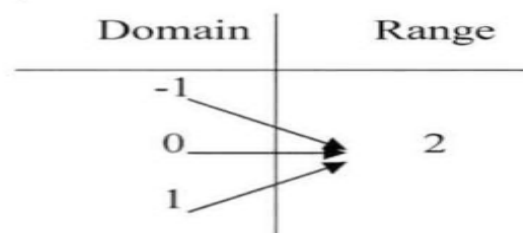
d) $(5x - 3)^2$

17. Which of the following correspondences is not function:

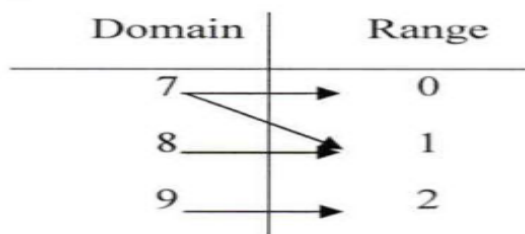
a)



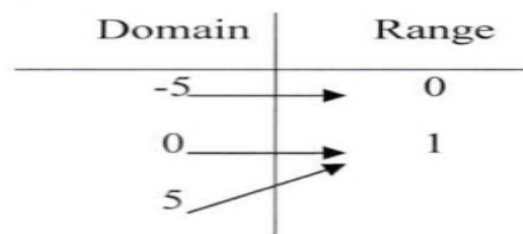
b)



~~c)~~



d)



18. The subtraction $(3x^2 - x + 3) - (x^2 - x - 1)$ is equal:

a) $2x^2 + 2$

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

c) $4x^2 + 2x + 2$

~~d) $2x^2 + 4$~~

19. The result of $(5x^3y)^2$ is :

a) $25x^5y^2$

~~b) $25x^6y^2$~~

c) $5x^5y^2$

d) $5x^6y^2$

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

a) $x^2 + 9$

b) $x^2 + 3x + 6$

c) $x^2 + 3x + 9$

~~d) $x^2 + 6x + 9$~~

Question 2: (4 points)

Perform and Simplify the following:

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

$$\begin{aligned} &= 2x^3 - 6x^2 + 4x - x^2 + 3x - 2 \\ &= 2x^3 - 7x^2 + 7x - 2 \end{aligned}$$

$$2. \frac{2x-4}{x+1} \div \frac{x-2}{(x+1)^2}$$

$$\frac{2x-4}{x+1} \cdot \frac{(x+1)(x+1)}{x-2}$$

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

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

Question 3: (4 points)

Solve the following equations:

1. $|2x - 3| = 7$

$$2x - 3 = 7 \quad \text{OR} \quad 2x - 3 = -7$$

$$2x = 10$$

$$2x = -4$$

$$x = 5$$

$$x = -2$$

$$x = \{-2, 5\}$$

$$2. \quad x^2 - x - 12 = 0$$

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

$$x = \frac{1 \pm \sqrt{1 - 4(1)(-12)}}{2}$$

$$x = \frac{1 \pm \sqrt{49}}{2} \quad \equiv$$

$$x = \frac{1 \pm 7}{2}$$

$$x = \frac{8}{2}, \frac{-6}{2}$$

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$$x = 4, -3$$

Question 4: (4 points)

Solve the following inequalities:

1. $5x - 7 \leq 3x + 5$

$$5x - 3x \leq 5 + 7$$

$$2x \leq 12$$

$$x \leq 6$$

$$(-\infty, 6]$$

$$2. |x-3| \leq 2$$

$$x-3 \leq 2 \quad \text{or} \quad x-3 \geq -2$$

$$x \leq 5, \quad x \geq 1$$

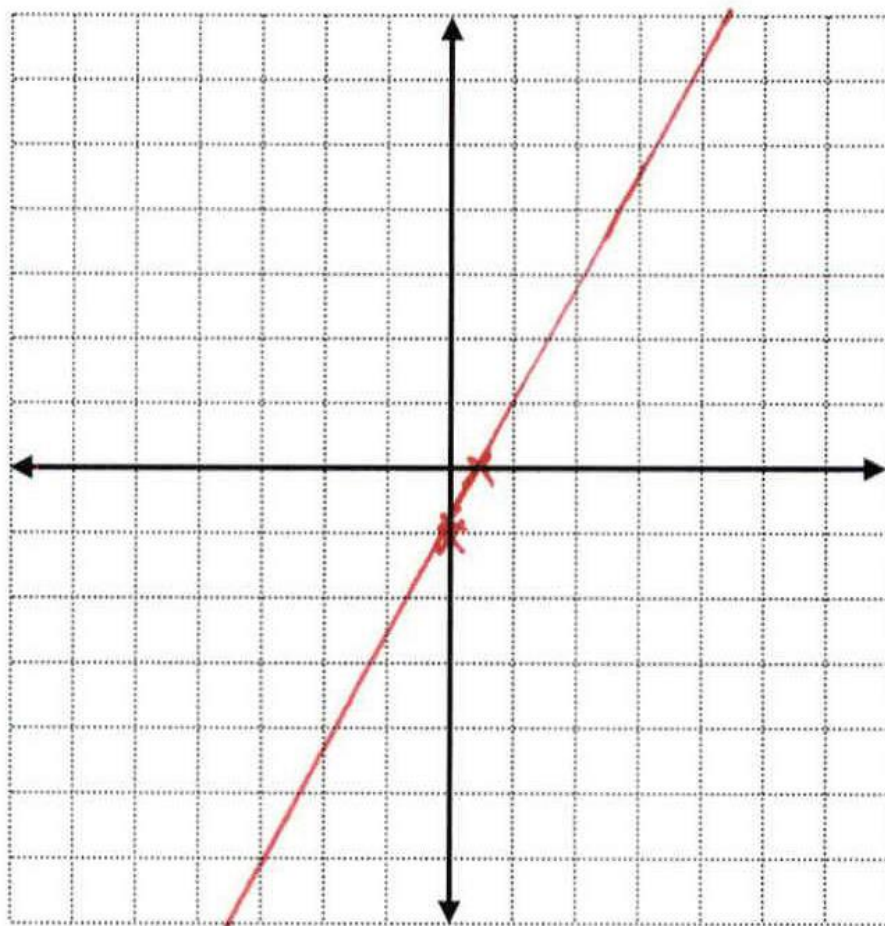
$$x = (-\infty, 5] \cup [1, \infty)$$

Question 5: (8 points)

1. Graph the equation: $y = 2x - 1$ and find the x -intercept and y -intercept.

$(0, -1) \rightarrow x\text{-intercept}$

$(\frac{1}{2}, 0) \rightarrow y\text{-intercept}$



2. Solve the following system of equations:

$$\begin{cases} 2x - 5y = 9 \\ -x + 2y = -4 \end{cases}$$

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

$$-2x + 4y = -8$$

$$2x - 5y = 9$$

$$-y = 1$$

$$y = -1$$

$$2x - 5y = 9$$

$$2x - 5(-1) = 9$$

$$2x = 9 - 5$$

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$$2x = 4$$

$$x = 2$$

$$\begin{matrix} x & y \\ (2, & -1) \end{matrix}$$