

تم تحميل هذا الملف من موقع المناهج المصرية



# موقع المناهج المصرية

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Answer the following questions:-

1<sup>st</sup> question: Choose the correct answer:

- (1) The solution set of the equation  $x^2 - x = \text{zero}$  is ... (a) {0} (b) {1} (c) {0,1} (d)  $\emptyset$
- (2) If  $P(A) = 2P(A')$  then  $P(A) = \dots$  (a)  $\frac{1}{2}$  (b)  $\frac{1}{3}$  (c)  $\frac{2}{3}$  (d) 1
- (3) The domain of the function  $f(x) = \frac{1}{x} + \frac{3}{x-2}$  is ... (a) {0,2} (b)  $R - \{0,2\}$  (c) {1,3} (d)  $R - \{1,3\}$
- (4) If A & B are two non-occurrence events &  $P(A \cup B) = 0.6$ ,  $P(A) = 0.2$  then  $P(B) = \dots$  (a) 0.4 (b) 0.6 (c) 0.8 (d) 0.2
- (5) The set of zeroes of the function  $f(x) = x^2 + 1$  is ... (a) {1} (b) {-1} (c) {1, -1} (d)  $\emptyset$
- (6) If  $x = 2$ ,  $y = x^2 - 1$  then  $y = \dots$  (a)  $\pm 3$  (b) 1 (c) 3 (d) -3

2<sup>nd</sup> question: -

(A) By using the general form solve the equation  $x^2 - 2x - 1 = 0$  where  $\sqrt{2} \approx 1.4$

(B) Find  $n(x)$  in the simplest form showing its domain where:  $n(x) = \frac{x^2 - 1}{x^2 - 3x + 2} \times \frac{x - 2}{x + 1}$

3<sup>rd</sup> question: -

(A) Find the Solution set of the following two equations together  $x - y = 1$ ,  $x^2 + y^2 = 5$

(B) If A & B are two events in a random experiment of a simple space if:

$P(A) = 0.6$ ,  $P(B^c) = 0.7$ ,  $P(A \cap B) = 0.2$  Find  $P(B)$ ,  $P(A \cup B)$

4<sup>th</sup> question: -

(A) Find  $n(x)$  in the simplest form showing its domain where:  $n(x) = \frac{2x}{x^2 - 1} - \frac{1}{x - 1}$

(B) Find the Solution set of the following equations together:  $2x - y = 1$ ,  $x + y = 2$

5<sup>th</sup> question:

(A) Prove that  $n_1 = n_2$  where  $n_1(x) = \frac{x^2 + 1}{x^2 + x}$ ,  $n_2(x) = \frac{2x^2 + 3}{2x^2 + 3x}$

(B) Draw the graph of the following function  $f(x) = x^2 - 4x + 3$  Where  $x \in [0, 4]$

From the drawing find the Solution set of the equation  $x^2 - 4x + 3 = 0$

-((( انتهت الامثلة )))-

Algebra 2017  
- 2nd term -

Q.1 Choose

- (1) (c)  $\{0, 1\}$
- (2) (c)  $\frac{2}{3}$
- (3) (b)  $\mathbb{R} - \{0, 2\}$
- (4) (a) 0.4
- (5) (d)  $\emptyset$
- (6) (c) 3

Q.2 (a)  $x^2 - 2x - 1 = 0$ ,  $\sqrt{2} \approx 1.4$   
 $a = 1$ ,  $b = -2$ ,  $c = -1$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{2 \pm \sqrt{4 + 4 \times 1 \times 1}}{2 \times 1}$$
$$= \frac{2 \pm \sqrt{8}}{2} = \frac{2 \pm 2\sqrt{2}}{2} \begin{cases} \frac{2 + 2\sqrt{2}}{2} = 2.4 \\ \frac{2 - 2\sqrt{2}}{2} = -0.4 \end{cases}$$

$\therefore \text{S.S.} = \{2.4, -0.4\}$

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

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

$\therefore \text{domain} = \mathbb{R} - \{2, 1, -1\}$

$\therefore n(x) = 1$

(5)

$$\boxed{\text{Q.3}} \quad \textcircled{a} \quad X - Y = 1 \quad \textcircled{1}$$

$$X^2 + Y^2 = 5 \quad \textcircled{2}$$

From  $\textcircled{1}$   $\boxed{X = Y + 1}$ , substituting in  $\textcircled{2}$

$$\therefore (Y + 1)^2 + Y^2 = 5$$

$$Y^2 + 2Y + 1 + Y^2 - 5 = 0 \quad \therefore 2Y^2 + 2Y - 4 = 0$$

dividing by 2  $\therefore Y^2 + Y - 2 = 0$

$$\therefore (Y + 2)(Y - 1) = 0$$

$$\begin{array}{l} \therefore Y = -2 \quad \left\{ \begin{array}{l} Y = 1 \\ X = Y + 1 \\ \quad = -2 + 1 \\ X = -1 \end{array} \right. \\ \therefore X = Y + 1 \quad \left\{ \begin{array}{l} X = Y + 1 \\ \quad = 1 + 1 \\ X = 2 \end{array} \right. \end{array}$$

$$\therefore S.S = \{(-1, -2), (2, 1)\}$$

$$\textcircled{b} \quad P(A) = 0.6, \quad P(B') = 0.7 \\ P(A \cap B) = 0.2$$

$$\therefore P(B) = 1 - P(B') = 1 - 0.7 = 0.3$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) \\ = 0.6 + 0.3 - 0.2 = 0.7$$

$\textcircled{6}$

Q.4

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

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

$$\therefore \text{domain} = \mathbb{R} - \{1, -1\}$$

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

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

$$\therefore n(x) = \frac{1}{x+1}$$

$$(b) \begin{array}{l} 2x - y = 1 \quad (1) \\ x + y = 2 \quad (2) \end{array} \text{ by adding (1) + (2)}$$

$$3x = 3 \quad \therefore \boxed{x=1}$$

$$\text{From (1) } \therefore 2(1) - y = 1$$

$$2 - y = 1$$

$$-y = 1 - 2$$

$$-y = -1$$

$$\therefore \boxed{y=1}$$

$$\therefore S.S = \{(1, 1)\}$$

(7)

**Q.5** (a)  $n_1(x) = \frac{x^2+1}{x^3+x}$

$$n_1(x) = \frac{x^2+1}{x(x^2+1)}$$

domain =  $\mathbb{R} - \{0\}$

$$n_1(x) = \frac{1}{x}$$

$$n_2(x) = \frac{2x^2+3}{2x^3+3x}$$

$$n_2(x) = \frac{2x^2+3}{x(2x^2+3)}$$

domain =  $\mathbb{R} - \{0\}$

$$n_2(x) = \frac{1}{x}$$

$\therefore$  domain of  $n_1$  = domain of  $n_2$   
 $\therefore n_1(x) = n_2(x)$

$\therefore n_1 = n_2$

(b)  $f(x) = x^2 - 4x + 3, x \in [0, 4]$

x	0	1	2	3	4
f(x)	3	0	-1	0	3

Vertex (2, -1)  
 Min value = -1

eqn. of axis of symmetry  
 is  $x = 2$

From the graph  
 points of intersection  
 with x-axis is (1, 0)  
 and (3, 0)

$\therefore S.S = \{1, 3\}$

(8)

