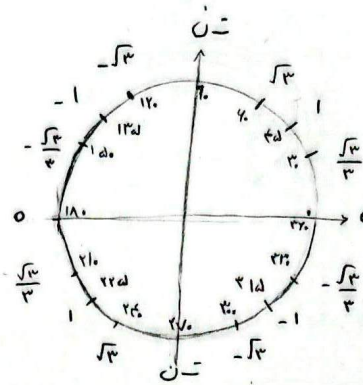


سوال ۱)



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

ب)  $-(-\frac{\sqrt{2}}{\sqrt{2}}) + \frac{\sqrt{2}}{\sqrt{2}} - 2(-\frac{\sqrt{2}}{\sqrt{2}}) = \frac{4\sqrt{2}}{\sqrt{2}}$

سوال ۲)

ج)  $-\frac{\sqrt{2}}{\sqrt{2}} + 2(\frac{\sqrt{2}}{\sqrt{2}}) - 2(-\frac{\sqrt{2}}{\sqrt{2}}) = \frac{4\sqrt{2}}{\sqrt{2}}$

د)  $\cos(0) + \sin(\frac{\pi}{2}) = 1 + 1 = 2$

$x = a \rightarrow a^2 + 4a = 2a + a + 2$   
 $a^2 + a - 2 = 0 \rightarrow \begin{cases} a = 1 \checkmark \\ a = -2 \times (a > 0) \end{cases}$

$f(x) = \begin{cases} x^2 + 4x & x \geq 1 \\ 2x + 3 & x < 1 \end{cases}$

سوال ۳)

$\rightarrow f(1) = 1^2 + 4(1) = \frac{5}{6}$

$|x+1| \geq 2 \rightarrow \begin{cases} x+1 \geq 2 \rightarrow x \geq 1 \\ x+1 \leq -2 \rightarrow x \leq -3 \end{cases}$

$x = -3 \rightarrow 2(-3)^2 - b = a + 2(-3)$   
 $a + b = \frac{24}{6}$

سوال ۴)

الف)  $x^2(x-4) \neq 0 \rightarrow D_f = \mathbb{R} - \{0, 4\}$

سوال ۵)

ب)  $2x^2(x+2) + 2(x+2) \neq 0 \rightarrow (x+2)(2x^2+2) \neq 0 \rightarrow 2(x^2+1)(x+2) \neq 0 \rightarrow D_f = \mathbb{R} - \{-2\}$

الف)  $x^2 - 1 \geq 0 \rightarrow \frac{-1}{+1} - \frac{1}{-1} + \left\{ \begin{array}{l} \rightarrow D_f = [2, +\infty) \end{array} \right.$

سوال ۶)

د)  $x - 2 \geq 0 \rightarrow x \geq 2$

ب)  $4 - 3x \geq 0 \rightarrow x \leq \frac{4}{3}$   
 $4x - 3 > 0 \rightarrow x > \frac{3}{4}$   
 $\rightarrow D_f = (\frac{3}{4}, \frac{4}{3}]$

$$\left. \begin{aligned} 4x - a \geq 0 &\rightarrow x \geq \frac{a}{4} \\ b - 3x \geq 0 &\rightarrow x \leq \frac{b}{3} \end{aligned} \right\} \xrightarrow{n} D_f = \{x\} \Rightarrow \frac{a}{4} = \frac{b}{3} = 2 \begin{cases} a = 8 \\ b = 6 \end{cases} \quad \frac{b}{a} = \frac{6}{8} = \frac{3}{4} \quad (7 \text{ سوال})$$

$$\text{الف) } \frac{(x-3)(x+2)}{(x^2-4)(x^2-9)} \geq 0 \quad \xrightarrow{n} D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty) \quad (1 \text{ سوال})$$

$$\begin{aligned} \text{ب) } & \frac{x^3 - 2x^2 - 4x + 4}{-(x^3 - x^2)} \geq 0 \quad \xrightarrow{n} D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty) \\ & \frac{x^3 + 2x^2 - 4x - 4}{-(x^3 + x^2)} \geq 0 \quad \xrightarrow{n} D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty) \\ & \frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \geq 0 \end{aligned}$$

$$\text{الف) } 2[x] - 4 \geq 0 \rightarrow [x] \geq 2 \quad D_f = [2, +\infty) \quad (9 \text{ سوال})$$

$$\text{ب) } 2[x] - 4 \geq 0 \rightarrow [x] \geq 2 \rightarrow [x] \geq 3 \quad D_f = [3, +\infty)$$

$$\text{الف) } \textcircled{1} \frac{x+1}{|x-2|} \geq 0 \quad \xrightarrow{n} D_f = [-1, 2) \cup (2, 4] \quad (10 \text{ سوال})$$

$$\text{ب) } \textcircled{2} \frac{4-x}{x^2+2x+4} \geq 0 \quad \Delta < 0 \quad a > 0$$

$$\begin{aligned} \text{ب) } & \textcircled{1} [x] - 4 \geq 0 \quad [x] \geq 4 \quad D_f = [4, +\infty) \\ & \textcircled{2} 2 - [x] \geq 0 \quad [x] \leq 2 \quad D_f = (-\infty, 2) \end{aligned} \quad \xrightarrow{n} \emptyset$$