

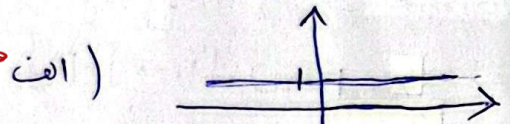
11, 10

الف)  $y_1^3, 2x_1^2 + 9x_1 \xrightarrow{x_1 \leq x_2} y_1^3 \leq y_2^3 \rightarrow y_1 \leq y_2 \checkmark$   
 $y_2^3 = 2x_2^2 + 9x_2$

ب)  $x \leq 1 \rightarrow |y| = 3 \rightarrow y \leq 3 \text{ و } y \geq -3 \text{ X}$

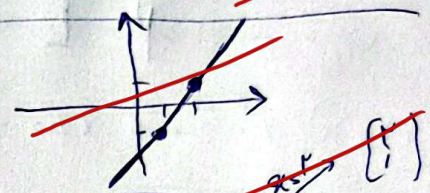
ج)  $\rightarrow \sqrt{x-5} \leq 0 \rightarrow x-5 \leq 0 \rightarrow x \leq 5 \rightarrow \begin{cases} 5 \\ 2 \end{cases} \checkmark$   
 $\rightarrow |y-2| \leq 0 \rightarrow y-2 \leq 0 \rightarrow y \leq 2 \Rightarrow \begin{cases} 2 \\ 2 \end{cases} \checkmark$

د)  $x \leq 0 \rightarrow \cos y \leq 0 \rightarrow y = \pi, \frac{3\pi}{2}, \dots \text{ X}$



$y = ax + b \xrightarrow{a=2} r = 2(u+b)$   
 $b=0$

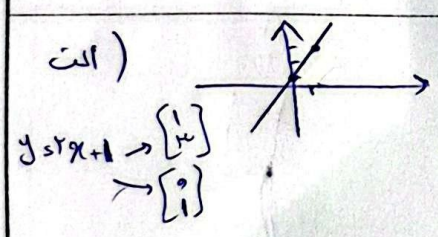
$y \leq k \rightarrow y \leq 1$



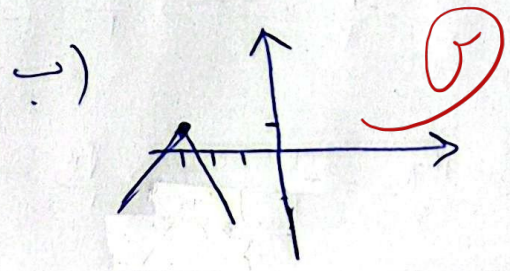
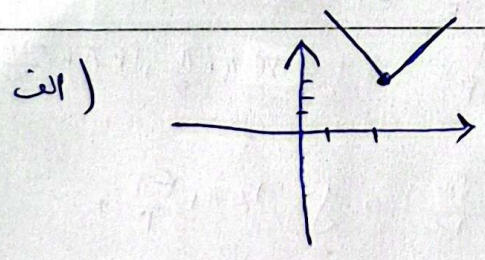
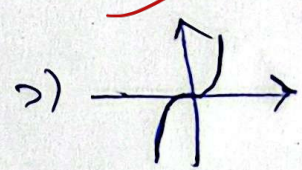
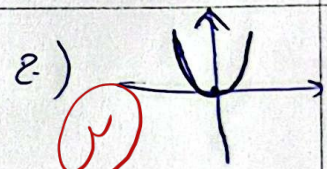
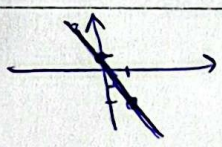
~~$y = ax + b \rightarrow 1 = 2(2) + b \rightarrow b \leq -3 \rightarrow y = 2x - 3 \xrightarrow{x \leq 1} \begin{cases} 1 \\ -1 \end{cases}$~~

الف)  $\begin{cases} y \leq ax + b \\ y = x \end{cases} \rightarrow ax + b \leq x \rightarrow a \leq 1 \xrightarrow{b=0} a + 2b \leq 1 + (2 \times 0) = 1$

ب)  $x \leq \frac{-b}{2a} \leq \frac{-a}{2} = 2 \rightarrow a = -4 \xrightarrow{\begin{bmatrix} 2 \\ 1 \end{bmatrix}} 1 \leq \begin{pmatrix} 2 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} -4 \\ 2 \end{pmatrix} + b$   
 $\rightarrow \boxed{b \leq 5}$   
 $a + 2b = -4 + (2 \times 5) = 6$



ب)  $y = 2x + 1 \rightarrow \begin{bmatrix} 1 \\ 0 \end{bmatrix}$   
 $y = -2x + 1 \rightarrow \begin{bmatrix} 1 \\ -1 \end{bmatrix}$



الف)  $x^2 - 4x \neq 0 \rightarrow x(x-4) \neq 0 \xrightarrow{x \neq 0, x \neq 4} D: \mathbb{R} - \{0, 4\}$

ب)  $x^2 - 7x + 12 \neq 0 \rightarrow \Delta = \frac{(-7)^2 - 4(1)(12)}{4} = \frac{49 - 48}{4} = \frac{1}{4} < 0 \rightarrow D: \mathbb{R}$

ج)  $x^2 + x + 4 \neq 0 \rightarrow \Delta = \frac{1^2 - 4(1)(4)}{1} = \frac{1 - 16}{1} = -15 < 0 \rightarrow D: \mathbb{R}$

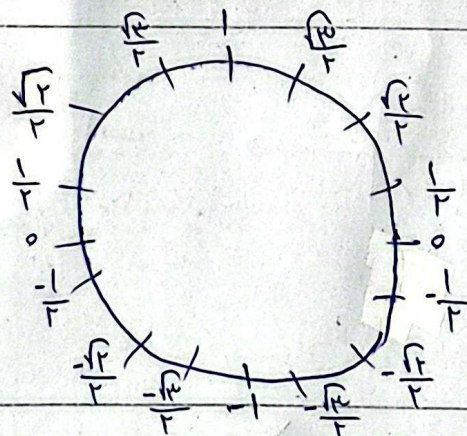
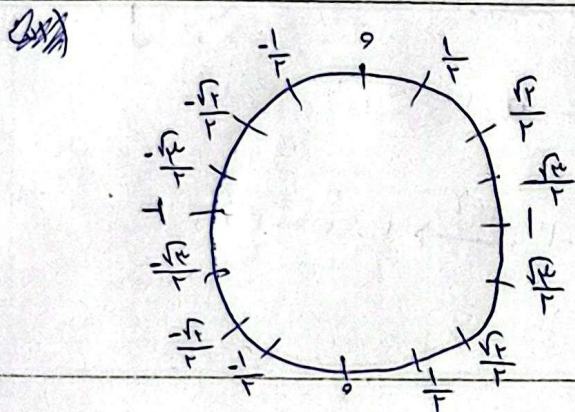
د)  $x^4 - 4x^2 \neq 0 \rightarrow x^2(x^2 - 4) \neq 0 \rightarrow x^2(x-2)(x+2) \neq 0 \rightarrow D: \mathbb{R} - \{0, \pm 2\}$

الف)  $4-x > 0 \rightarrow x < 4 \rightarrow (-\infty, 4] / x-2 > 0 \rightarrow x > 2 \rightarrow [2, +\infty) \rightarrow D: (-\infty, 4] \cap [2, +\infty) \Rightarrow D: [2, 4]$

ب)  $x^2 - 1 \neq 0 \rightarrow (x-1)(x+1) \neq 0 \xrightarrow{x \neq 1, x \neq -1} D: \mathbb{R} - \{\pm 1\}$

ج)  $x-2 > 0 \rightarrow x > 2 \rightarrow [2, +\infty)$ ,  $x-4 \neq 0 \rightarrow x \neq 4 \rightarrow D: [2, +\infty) - \{4\}$

د)  $|x| + x^2 \neq 0 \rightarrow x \neq 0 \rightarrow D: \mathbb{R} - \{0\}$



$\cos \frac{2\pi}{3} = -\frac{1}{2} \xrightarrow{\text{معكوس}} \frac{1}{2} \rightarrow \sin y = \frac{1}{2} \rightarrow y: 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}$

$\cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2} \xrightarrow{\text{معكوس}} -\frac{\sqrt{3}}{2} \rightarrow \sin y = -\frac{\sqrt{3}}{2} \rightarrow y: 2k\pi + \frac{4\pi}{3}, 2k\pi + \frac{5\pi}{3}$