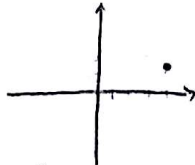


الف) $\text{if } (x_1, y_1) \in f \rightarrow x_1 = x_2 \rightarrow y_1 = y_2 \checkmark$
 $\text{if } (x_2, y_2) \in f$

$y_1^3 - x_1 = 2x_1^2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2 \checkmark$
 $y_2^3 - x_2 = 2x_2^2$

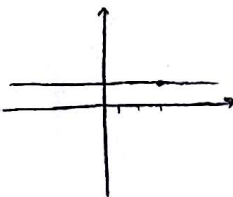
تابع است

ب) $x=0 \rightarrow |y|=3 \rightarrow y=\pm 3$ تابع نیست

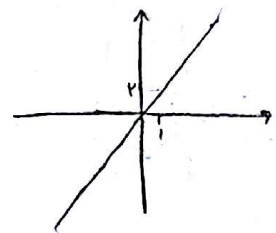
ج) $|y-2| = -\sqrt{x-4} \rightarrow y=2, x=4 \rightarrow (4, 2)$  نقطه در صورتی ممکن است که در طرف برابر صند باشد

تابع است

د) $x=0 \rightarrow \cos y > 0 \rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2} \rightarrow (k\pi + \frac{\pi}{2})$ تابع نیست

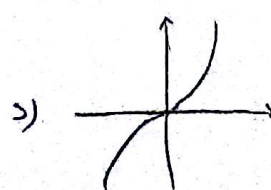
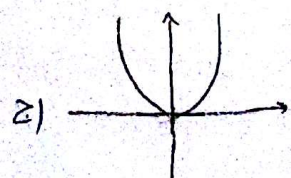
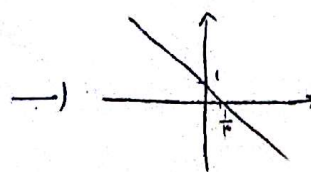
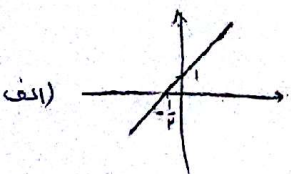
الف) $y=1^2$ 

$\rightarrow y = 2x + b$
 $2 = 2(1) + b$
 $\rightarrow y = 2x$

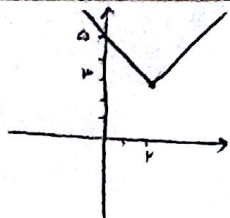


الف) $y=x \rightarrow a=1, b=0 \rightarrow a+2b=1+0=1$

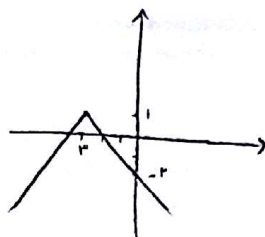
ب) $\frac{-b}{2a} = 2 \rightarrow \frac{-a}{2} = 2 \rightarrow -a = 4 \rightarrow a = -4$
 $\frac{-\Delta}{4a} = 1 \rightarrow \frac{-b^2 + 4ac}{4a} \rightarrow \frac{-(-4)^2 + 4 \cdot b}{-4} = 1 \rightarrow \frac{-16 + 4b}{-4} = 1 \rightarrow \frac{-16}{-4} + \frac{4b}{-4} = 1$
 $b = 1 + 4 = 5$
 $a + 2b = -4 + 10 = 6 \checkmark$



(الف)



ج) -



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

$$ب) x^2 - 7x + 14 \neq 0 \rightarrow \Delta = b^2 - 4ac = 49 - 98 < 0 \quad \text{خرج هير صند ربي نند} \quad D_f = \mathbb{R}$$

$$ج) x^2 + x + 4 \neq 0 \rightarrow \Delta = 1 - 16 < 0 \quad \text{ربي نند} \quad D_f = \mathbb{R}$$

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

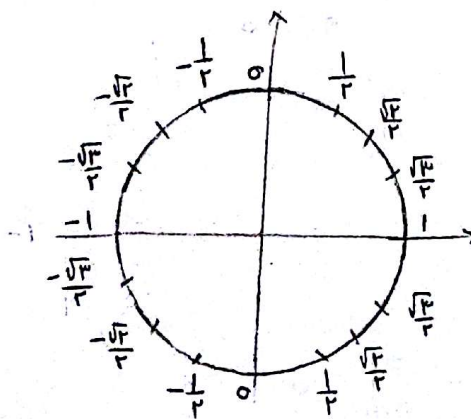
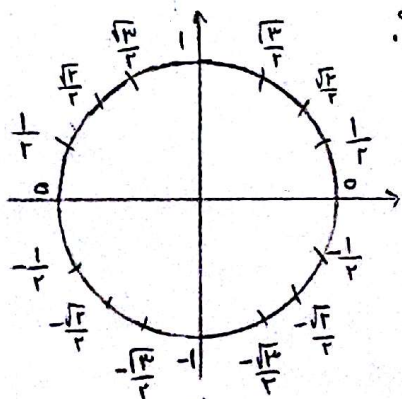
$$الف) 4 - x > 0 \rightarrow 4 > x \rightarrow x < 4 \quad / \quad x - 2 > 0 \rightarrow x > 2 \quad D_f = (2, 4)$$

$$ب) x^2 + 1 \neq 0 \rightarrow x^2 \neq -1 \quad \text{هيم صيب} \quad D_f = \mathbb{R}$$

$$ج) x - 2 < 0 \rightarrow x < 2$$

$$x - 4 \neq 0 \rightarrow x \neq 4 \quad D_f = [2, +\infty) - \{4\}$$

$$د) |x| + x^2 \neq 0 \quad \begin{matrix} \oplus \checkmark \\ \ominus \checkmark \\ \odot \times \end{matrix} \quad D_f = \mathbb{R} - \{0\}$$



الف) $\cos \frac{2\pi}{3} = -\frac{1}{2} \xrightarrow{\text{قوسين}} \frac{1}{2}$ $\sin \frac{\pi}{4} = \sin \frac{5\pi}{4} = \frac{1}{2}$

ب) $\cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2} \xrightarrow{\text{قوسين}} -\frac{\sqrt{3}}{2}$ $\sin \frac{4\pi}{3} = \sin \frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$