

$$\text{الف) } y^3 - x = 2x^2$$

$$y^3 = 2x^2 + x$$

$$y = \sqrt[3]{2x^2 + x}$$

$$x=1$$

$$y = \sqrt[3]{3}$$

✓ تابع است

$$\text{ب) } |y| + x^2 = x + 3 \quad \text{ج) } \sqrt{x-1} + |y-2| = 0$$

$$|y| = -x^2 + x + 3$$

$$y = -x^2 + x + 3$$

$$\frac{1}{2} y = x^2 - x - 3$$

X تابع نیست

$$\sqrt{x-1} > 0, |y-2| > 0$$

$$\sqrt{x-1} = 0 \Rightarrow x=1$$

$$|y-2| = 0 \Rightarrow y=2$$

✓ تابع هست

$$\text{د) } x = \cos y$$

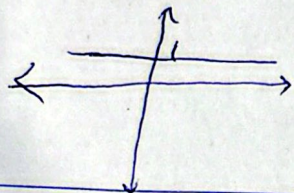
$$x=0$$

$$0 = \cos y$$

$$y = \frac{\pi}{2}, \frac{3\pi}{2}$$

X تابع نیست

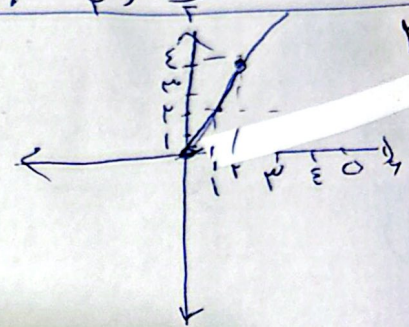
$$\text{الف) } y=1 \rightarrow \text{تابع ثابت}$$



$$\text{ب) } y=2$$

$$x=1$$

$$y=2x$$



$$\text{الف) } y = ax + b \rightarrow b=0, a=1 \rightarrow a + 2b = 1 + 2(0) = 1$$

$$\text{ب) } y = x^2 + x + b$$

$$a + 2b = \frac{4}{1} - \frac{2 \cdot 1}{1} = -\frac{2}{1}$$

$$\frac{-b}{\frac{1}{2a}} = 2$$

$$-b = 4a \Rightarrow b = -4a$$

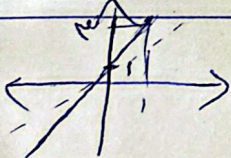
$$\Rightarrow 1 = 1 + 2a + b \Rightarrow -2 = 2a + b$$

$$-2 = 2a - 4a$$

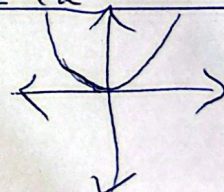
$$-2 = -2a$$

$$a = 1$$

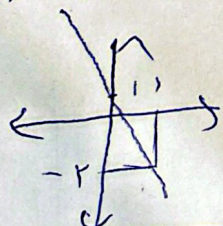
$$\text{الف) } y = 2x + 1$$



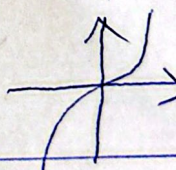
$$\text{ج) } y = x^2$$



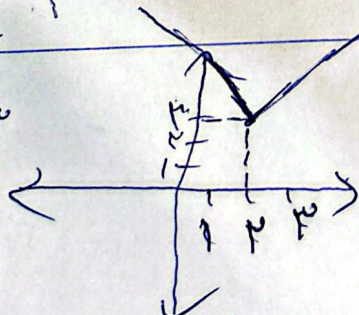
$$\text{ب) } y = -2x + 1$$



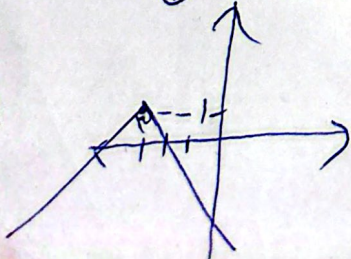
$$\text{د) } y = x^3$$



$$\text{الف) } y = |x-2| + 3$$



$$\text{ب) } y = -|x+2| + 1$$



فصل اول ریاضی - سری سوم

$$\text{الف) } y = \frac{x+2}{x^2-2x} \quad \frac{-\varepsilon}{-\frac{1}{2}+\frac{1}{2}-\frac{1}{2}+} \quad \frac{\varepsilon}{-\frac{1}{2}+\frac{1}{2}-\frac{1}{2}+}$$

$$\frac{x^2-2x}{\varepsilon > 0} \quad D_f = (-\infty, 0) \cup (0, \varepsilon) \cup (\varepsilon, \infty)$$

$$\Rightarrow y = \frac{x+2}{x^2-2x} \quad D_f = \mathbb{R}$$

$$x^2 - 2x + 1 > 0 \Rightarrow (x-1)^2 > 0 \Rightarrow x \neq 1$$

$$\text{ب) } y = \frac{x+2}{x^2-2x}$$

$$x^2 - 2x = 0$$

$$x^2(x-2) = 0$$

$$x = 0 \text{ or } x = 2$$

$$D_f = \mathbb{R} - \{0, 2\}$$

$$\text{ج) } y = \frac{x+2}{x^2-2x} \quad D_f = \mathbb{R}$$

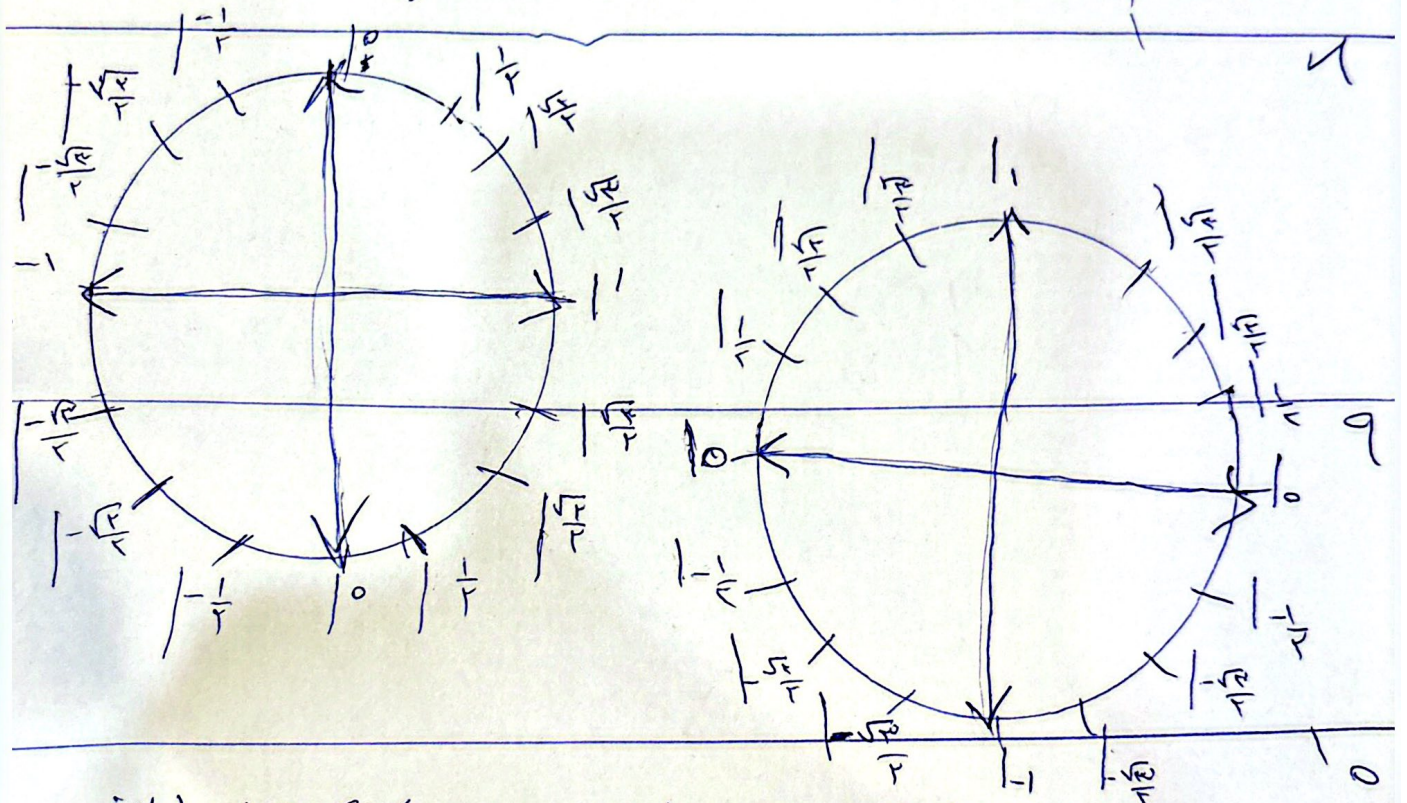
$$x^2 + x + 2 > 0 \Rightarrow \Delta = 1^2 - 4 \times 1 \times 2 = 1 - 8 = -7 < 0 \Rightarrow x \in \mathbb{R}$$

$$\text{د) } y = \sqrt{4-x} + \sqrt{x-2} \Rightarrow x \in [2, 4] \quad D_f = [2, 4]$$

$$y = x, x = 2 \Rightarrow x \in [2, 4]$$

$$\Rightarrow y = \frac{x+1}{x^2+1} \quad x^2+1 > 0 \quad D = \mathbb{R}$$

$$\text{ه) } y = \frac{x-2}{x-2} \Rightarrow x-2 > 0, x-2 \neq 0 \Rightarrow D_f = (2, \infty)$$



$$\text{الف) } \cos \frac{\pi}{3} = \frac{1}{2} \Rightarrow \text{سينوس } 30^\circ \text{ و } 150^\circ = \frac{\pi}{6}, \frac{5\pi}{6}$$

$$\text{ب) } \cos \frac{\pi}{4} = \frac{\sqrt{2}}{2} \Rightarrow \text{سينوس } 45^\circ \text{ و } 135^\circ = \frac{\pi}{4}, \frac{3\pi}{4}$$