

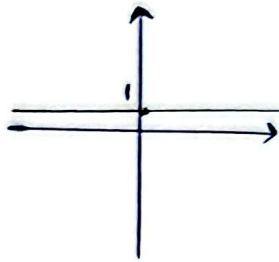
الف) $y^3 - x = 2x^2$ تابع است
 $y_1^3 = 2x_1^2 + x_1$
 $y_2^3 = 2x_2^2 + x_2$ } $x_1 = x_2 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$
 تابع نیست
 ب) $|y| + x^2 = x + 3$ مثال $\Rightarrow x = 0 \Rightarrow |y| = 3 \Rightarrow y = \pm 3$

تابع نیست
 ج) $\sqrt{x-2} + |y-2| = 0$ $\Rightarrow \begin{cases} \sqrt{x-2} = 0 \Rightarrow x = 2 \\ |y-2| = 0 \Rightarrow y = 2 \end{cases}$
 تابع نیست
 د) $x = \cos y \xrightarrow{x = \frac{1}{2}} y = \{2k\pi \pm \frac{\pi}{3} | k \in \mathbb{Z}\}$

الف)

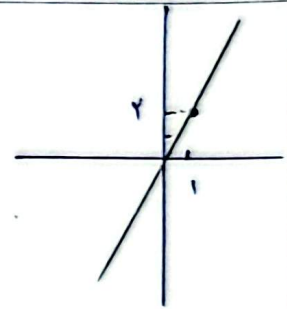
$y = k$

$y = 1$



ب)

$y = ax + b$
 $a = 2$
 $2 = 2 + b \Rightarrow b = 0$
 $y = 2x$ ✓

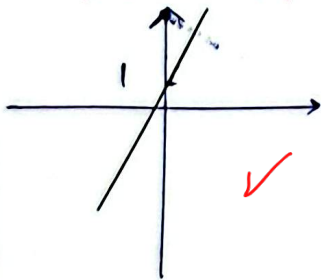


الف) $y = ax + b = x \Rightarrow a = 1$ $b = 0 \Rightarrow a + 2b = 1 + 0 = 1$

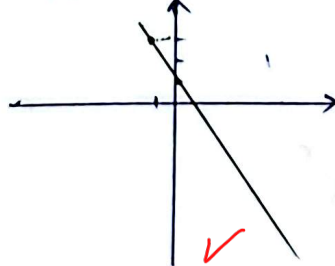
ب) $y = x^2 + ax + b$

$\Delta = a^2 - 4b = 14 - 4b = -4 \Rightarrow b = 4$
 $\text{Min} = \left| \frac{-b}{2a} \right| = \left| \frac{2}{1} \right| = 2 \Rightarrow \begin{cases} \frac{-a}{2} = 2 \Rightarrow a = -4 \\ \frac{-\Delta}{4} = 1 \Rightarrow +\Delta = -4 \end{cases}$
 $a + 2b = -4 + 8 = 4$

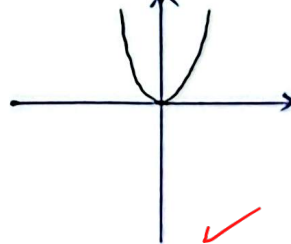
الف) $y = 2x + 1$



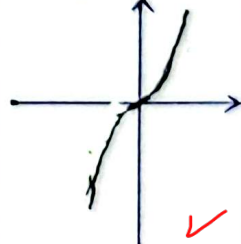
ب) $y = -3x + 1$



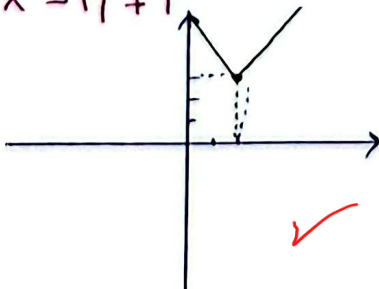
ج) $y = x^2$



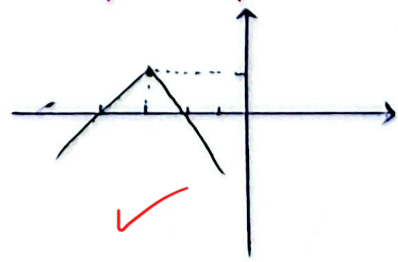
د) $y = x^3$



الف) $y = |x - 2| + 3$



ب) $y = -|x + 3| + 1$



الف) $y = \frac{x+2}{x^2-4x}$ $x^2-4x=0 \Rightarrow x(x-4)=0 \Rightarrow x=0, 4 \Rightarrow Df = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+2}{x^2-7x+14}$ $\Delta = b^2-4ac \Rightarrow \Delta = 49-4(1)(14) \Rightarrow \Delta = -15 \Rightarrow$ ناقص

$Df = \mathbb{R}$

ج) $y = \frac{x+2}{x^2+x+2}$ $\Delta = b^2-4ac \Rightarrow \Delta = 1-4(1)(2) \Rightarrow \Delta < 0 \Rightarrow$ ناقص $Df = \mathbb{R}$

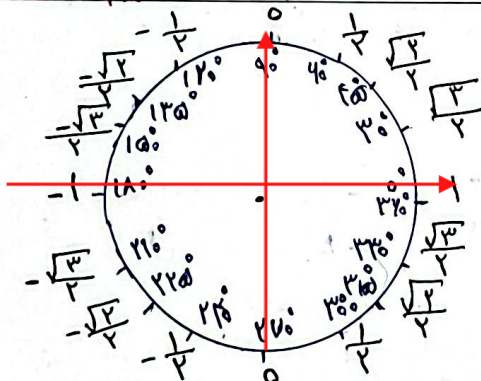
د) $y = \frac{x+2}{x^2-4x^2}$ $\Rightarrow x^2(x-2)(x+2)=0 \Rightarrow \begin{cases} x_1=0 \\ x_2=-2 \end{cases} \Rightarrow Df = \mathbb{R} - \{0, -2\}$

ه) $y = \sqrt{4-x} + \sqrt{x-2}$ $-x+4 \geq 0 \Rightarrow 4 \geq x$ و $x-2 \geq 0 \Rightarrow x \geq 2 \Rightarrow Df = [2, 4]$

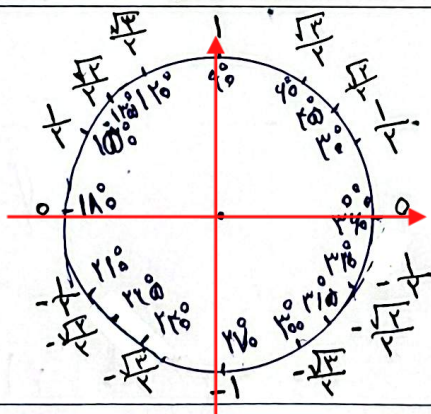
و) $y = \frac{3x+1}{x^2+1}$ $\Rightarrow$ همیشه مثبت و منفرست $\Rightarrow Df = \mathbb{R}$

ز) $y = \frac{\sqrt{x-2}}{x-4}$ $\Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$ و $x \neq 4 \Rightarrow Df = [2, \infty) - \{4\}$

ح) $y = \frac{2x+3}{|x|+x^2}$ $\Rightarrow x \neq 0$ چون $|x|+x^2 \neq 0 \Rightarrow Df = \mathbb{R} - \{0\}$



کسینوس ها



سینوس ها

الف) $\{2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4} | k \in \mathbb{Z}\}$

$\cos \frac{2\pi}{3} = -\frac{1}{2} \xrightarrow{\text{قرینه}} \frac{1}{2}$

راه حل ؟

ب) $\{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} | k \in \mathbb{Z}\}$

$\cos \frac{11\pi}{4} = \frac{\sqrt{2}}{2} \xrightarrow{\text{قرینه}} -\frac{\sqrt{2}}{2}$