

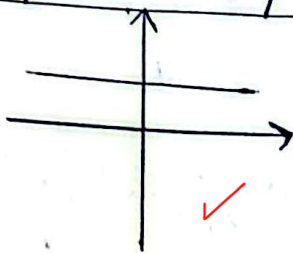
الف) $y^3 - x = 2x^2 \rightarrow y_1^3 - x_1 = 2x_1^2$ $\left. \begin{array}{l} y_1^3 - x_1 = 2x_1^2 \\ y_2^3 - x_2 = 2x_2^2 \end{array} \right\} \rightarrow x = x_1 = x_2 \rightarrow y_1 = y_2$ تابع است

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \rightarrow y = \pm 3$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0$ چون دو عبارت مثبت صفر شده $x=4, y=2$ تابع است

د) $x = \cos y \xrightarrow{x=0} y = \frac{\pi}{2}, \frac{3\pi}{2}$ دو عبارت برای y پیدا شد پس تابع نیست

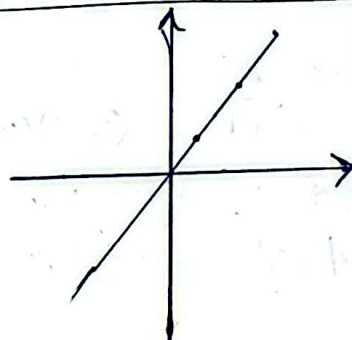
الف) $y = 1$



ب) $y = 2x$

$y=2 \quad x=1$

$y=4 \quad x=2$



الف) $y = ax + b \xrightarrow{\text{تابع همانی}} y = x \rightarrow a=1, b=0 \quad a+2b=1$

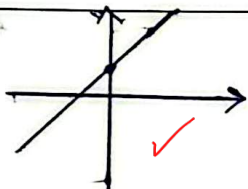
ب) $y = x^2 + ax + b \rightarrow \frac{-a}{2} = 2 \rightarrow -a = 4 \rightarrow a = -4 \quad a+2b = -4+10=6$

$1 = 4 - 1 + b \rightarrow b = 5$

$b = 5$

الف) $y = 2x + 1$

$x=0 \quad y=1$
 $y=3 \quad x=1$

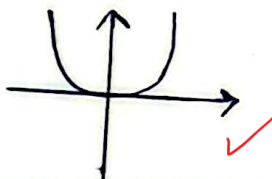


ب) $y = -3x + 1$

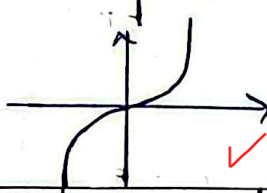
$x=0 \quad y=1$
 $y=4 \quad x=-1$



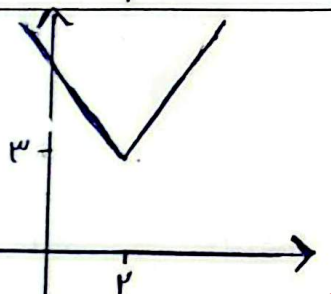
ج) $y = x^2$



د) $y = x^3$

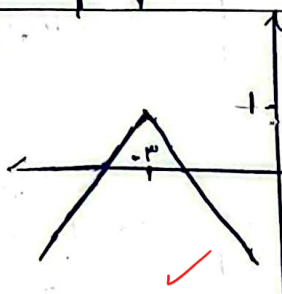


الف)



$y = |x-2| + 3$

ب)



$y = -|x+3| + 1$

الف) $y = \frac{x+4}{x^2-4x} = \frac{x+4}{x(x-4)}$ $\xrightarrow{\text{ریشه های منفرجه}} x=0, x=4 \rightarrow D_f = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+4}{x^2-7x+14} = \frac{x+4}{x^2-7x+14}$ $\xrightarrow{\text{دلتای منفرجه}} D_f = \mathbb{R}$
 مقلی است بین
 تغییر نه نابذیر است

د) $y = \frac{x+4}{x^2-4x^2} = \frac{x+4}{x^2(x-4)(x+4)}$

$D_f = \mathbb{R} - \{0, 4, -4\}$

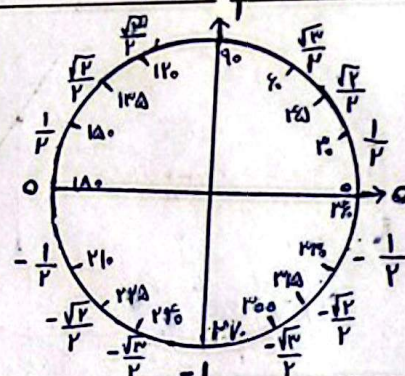
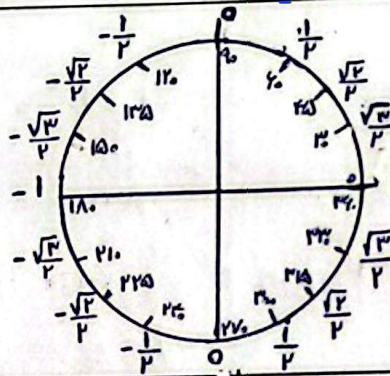
ج) $y = \frac{x+4}{x^2+x+4} = \frac{x+4}{x^2+x+4}$ $\xrightarrow{\text{دلتای منفرجه}} D_f = \mathbb{R}$
 مقلی است بین
 فاند ریشه است

الف) $y = \sqrt{4-x} + \sqrt{x-2} \rightarrow \begin{cases} 4-x \geq 0 \rightarrow x \leq 4 \\ x-2 \geq 0 \rightarrow x \geq 2 \end{cases} \cup \rightarrow D_f = [2, 4]$

ب) $\frac{3x+1}{x^2+1} \rightarrow \frac{3x+1}{x^2+1} \rightarrow x^2 > -1$ $\xrightarrow{\text{عبارت همواره برقرار است}} D_f = \mathbb{R}$

ج) $\frac{\sqrt{x-2}}{x-4} \rightarrow \begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ x-4 < 0 \rightarrow x < 4 \end{cases} \rightarrow D_f = (2, 4)$
 یا این صحنی

د) $\frac{2x+3}{|x+x^2|} \rightarrow \begin{cases} |x+x^2| > 0 \\ x^2 > |x| \end{cases} \rightarrow D_f = \mathbb{R} - \{0\}$



الف) $-\cos \frac{4\pi}{9} = \frac{1}{9} \rightarrow \sin 30^\circ, \sin 150^\circ \rightarrow \sin \frac{\pi}{6}, \sin \frac{5\pi}{6}$

ب) $-\cos \frac{11\pi}{9} = -\frac{\sqrt{3}}{9} \rightarrow \sin 240^\circ, \sin 300^\circ \rightarrow \sin \frac{4\pi}{3}, \sin \frac{5\pi}{3}$

$$ع:) y = \frac{\sqrt{x-4}}{x-4}$$

$$\left. \begin{array}{l} \text{شرط اول} \quad x-4 \geq 0 \rightarrow x \geq 4 \\ \text{شرط دوم} \quad x-4 \neq 0 \rightarrow x \neq 4 \end{array} \right\} \rightarrow D_y = [4, \infty) - \{4\}$$