

$$\begin{aligned} \text{الف)} \quad y^3 - x &= 2x^2 \rightarrow \left. \begin{array}{l} \text{if } (x_1, y_1) \in f \\ \text{if } (x_2, y_2) \in f \end{array} \right\} \text{if } x_1 = x_2 \rightarrow y_1 = y_2 \\ \downarrow \\ y_1^3 &= y_2^3 \rightarrow y_1 = y_2 \quad \text{تابع هست} \end{aligned}$$

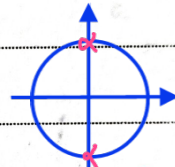
(۱)

(۱۸۷۵)

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

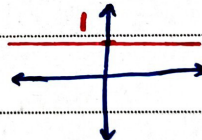
ج) $\sqrt{x-4} + |y-2| = 0$ جمع عبارات که امکان ندارد هیچ کدام منفی باشند و پس نمی توانیم صفر باشند و فقط سکنه صفر عبارت باشند جمع است

$$\begin{aligned} x-4=0 &\rightarrow x=4 \\ y-2=0 &\rightarrow y=2 \end{aligned} \quad \left. \begin{array}{l} \text{نقطه ۴} \\ \text{نقطه ۲} \end{array} \right\} \text{تابع هست}$$

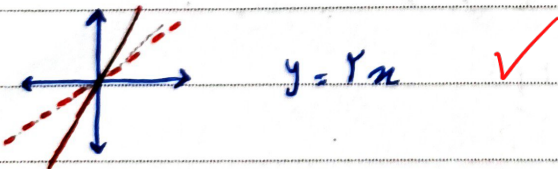


$$\text{د)} \quad x = \cos y \xrightarrow{x=0} \cos y = 0 \rightarrow y = 0, \pi \quad \text{تابع نیست}$$

$$\text{ه)} \quad y = k \rightarrow |r| \rightarrow k=1 \quad \text{تابع نیست}$$



$$\text{و)} \quad y = ax + b \rightarrow |r| \rightarrow a=r \rightarrow r = r + b \rightarrow b=0$$



$$y = rx \quad \text{تابع هست}$$

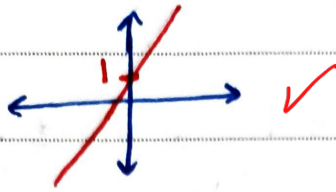
$$\begin{aligned} \text{الف)} \quad y &= x \rightarrow y = ax + b \rightarrow a=1, b=0 \\ a+rb &= 1+0=1 \quad \text{تابع هست} \end{aligned}$$

$$\begin{aligned} \text{ب)} \quad y &= (x^2 + ax + b) \xrightarrow{x=r} \frac{r^2}{rc} = r \rightarrow rc = -a \rightarrow a = -rc \\ \rightarrow \frac{rc}{rc} &= r \rightarrow c=1, a=-r, 1=r-1+b \rightarrow b=0 \rightarrow a+rb = -r+0 = -r \quad \text{تابع نیست} \end{aligned}$$

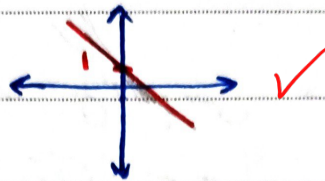
(۴)

(۲)

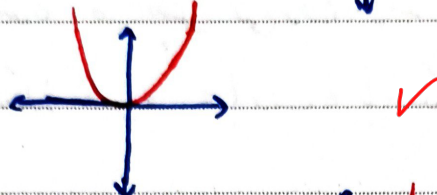
الف) $y = 2x + 1$



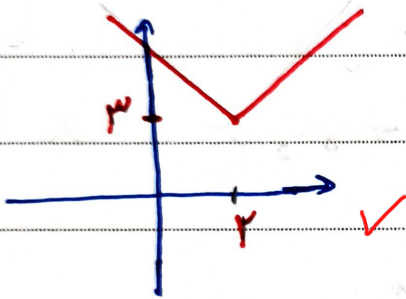
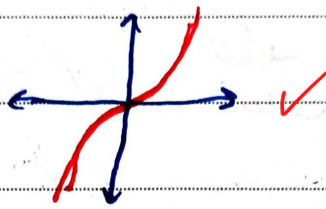
ب) $y = -2x + 1$



ج) $y = x^2$

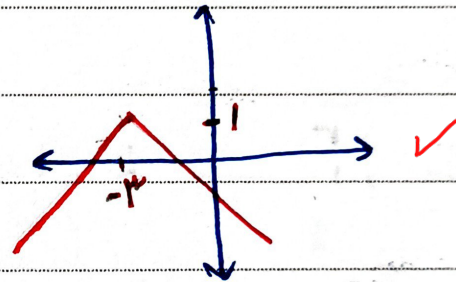


د) $y = x^3$



الف) $y = |x - 2| + 3$

ب) $y = -|x - 2| + 3$



(۲) (۵)

الف) $y = \frac{x + f}{x^2 - fx} \rightarrow x^2 - fx \neq 0 \rightarrow x^2 \neq fx \rightarrow x \neq f$

$\mathbb{R} - \{0, f\}$

(۶)

۱۱۵

ب) $y = \frac{x + f}{x^2 - \sqrt{a+1}x} \rightarrow x^2 - \sqrt{a+1}x \neq 0 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{\sqrt{f^2 - 4f}}{2} \rightarrow$ دقتانی $\rightarrow x \in \mathbb{R}$

$\mathbb{R}$

ستایش حسن زاده

1 $y = \frac{x+1}{x^2+x+1} \rightarrow x^2+x+1 \neq 0 \rightarrow \frac{-1 \pm \sqrt{1-4}}{2}$ دقتانی

$\rightarrow x \in \mathbb{R}$ $\mathbb{R}$

2 $y = \frac{x+1}{x^2-x+1} \rightarrow x^2-x+1 \neq 0 \rightarrow x \neq 0, 1$

$\mathbb{R} - \{0, 1\}$

پاسی صفا

3 الف) $y = \sqrt{4-x} + \sqrt{x-2} \rightarrow 4-x \geq 0 \rightarrow x \leq 4$ *

$[2, +\infty) \cup (-\infty, 4]$

$x-2 \geq 0 \rightarrow x \geq 2$ *

$\Rightarrow [2, 4]$

4 $y = \frac{x^2+1}{x^2+1} \rightarrow x^2+1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow x \in \mathbb{R}$

$\mathbb{R}$

5 $y = \frac{\sqrt{x-2}}{x-2} \rightarrow x-2 \neq 0 \rightarrow x \neq 2$

$x-2 \geq 0 \rightarrow x \geq 2$

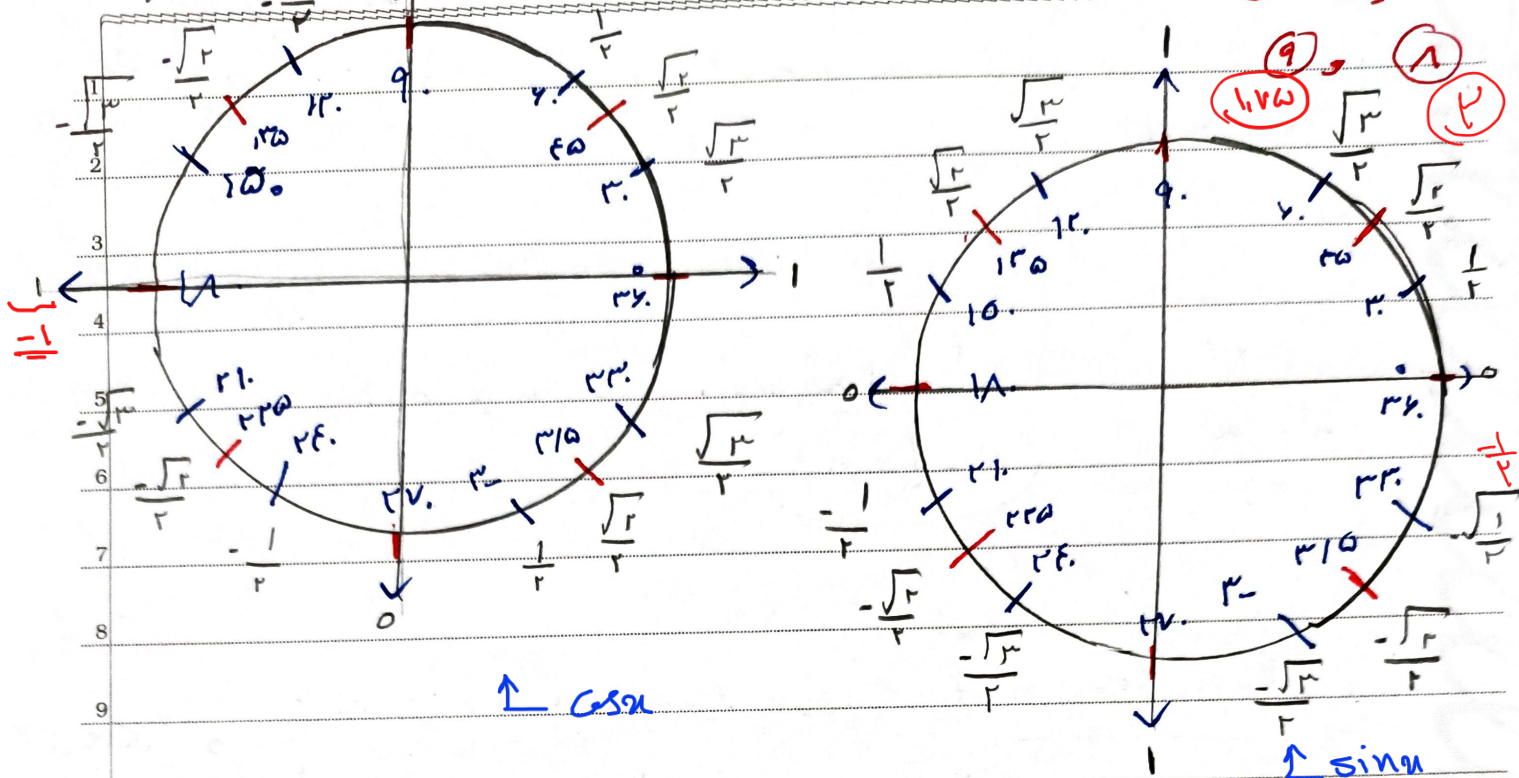
$[2, +\infty) - \{2\}$

6 $y = \frac{x^2+1}{|x|+x^2} \rightarrow |x|+x^2 \neq 0 \rightarrow x \neq 0$

$\mathbb{R} - \{0\}$

Day. . . . Month. . . . Year.

ستایش حسن زاده



$$\rightarrow \sin \frac{0.5}{4}, \sin \frac{\pi}{4}$$

ب) $\frac{11\pi}{4} \rightarrow \cos 3\pi \rightarrow \frac{\sqrt{3}}{2} \xrightarrow{\text{قرینه}} -\frac{\sqrt{3}}{2} \rightarrow \sin 2\pi, \sin \pi$
 $\rightarrow \sin \frac{6\pi}{4}, \sin \frac{5\pi}{4}$ ✓

$$y = \frac{x+r}{x^2-rx^2} \rightarrow x^2-rx^2 \neq 0 \rightarrow x^0(x+r)(x-r) \neq 0$$

$$D_y = \mathbb{R} - \{-r, 0, r\}$$