

الف) $y^3 - x = 2x^2 \rightarrow \left. \begin{array}{l} \text{if } (x_1, y_1) \in f \\ \text{if } (x_2, y_2) \in f \end{array} \right\} \text{if } x_1 = x_2 \rightarrow y_1 = y_2$ (1)

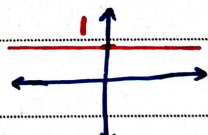
$y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع هست ✓

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

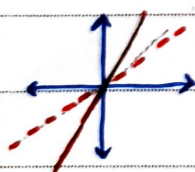
ج) $\sqrt{x-4} + |y-2| = 0$ جمع عبارات که امکان ندارد هیچ کدام منفی باشند و پس نمی توانیم صفر باشند و فقط سکنه صفر عبارت باشند جمع است

$\left. \begin{array}{l} x-4=0 \rightarrow x=4 \\ y-2=0 \rightarrow y=2 \end{array} \right\} \begin{array}{l} \text{نقطه } 4 \\ \text{نقطه } 2 \end{array}$ تابع هست ✓

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

الف) $y = k \rightarrow |r| \rightarrow k=1$  $y=1$ (2)

ب) $y = ax + b \rightarrow |r| \rightarrow a=r \rightarrow r = r + b \rightarrow b=0$

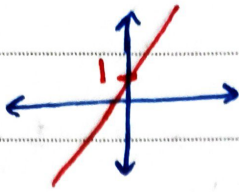
 $y=2x$

الف) $y = x \rightarrow y = ax + b \rightarrow a=1, b=0$
 $a+rb = 1+0 = 1$ (3)

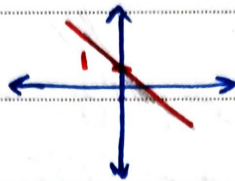
ب) $y = (x^2 + ax + b) \xrightarrow{x=r} \frac{r^2}{rc} = r \rightarrow rc = -a \rightarrow a = -rc$
 $\rightarrow \frac{rc}{rc} = r \rightarrow c=1$ و $a = -r$ و $1 = r^2 - 1 + b \rightarrow b=0 \rightarrow a+rb = -r+0 = -r$ (4)

(۲)

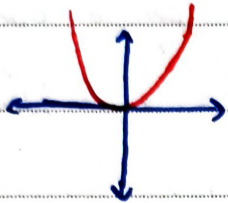
الف) $y = 2x + 1$



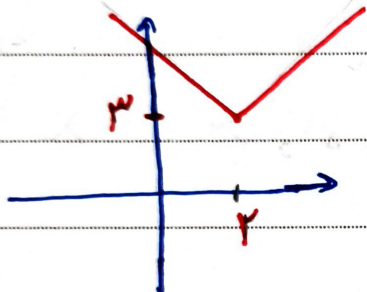
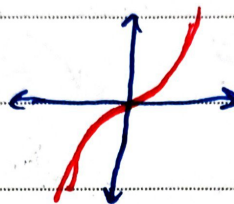
ب) $y = -2x + 1$



ج) $y = x^2$

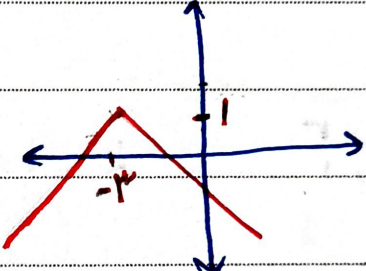


د) $y = x^3$



الف) $y = |x - 2| + 3$

ب) $y = -|x - 2| + 3$



(۳)

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

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

(۴)

ب) $y = \frac{x + f}{x^2 - \sqrt{x + 14}} \rightarrow x^2 - \sqrt{x + 14} \neq 0 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{\sqrt{49 - 4f}}{2} \rightarrow$ دقتانی $\rightarrow x \in \mathbb{R}$

$\mathbb{R}$

ج) $y = \frac{x + f}{x^2 + x + f} \rightarrow x^2 + x + f \neq 0 \rightarrow \frac{-1 \pm \sqrt{1 - 4f}}{2} \rightarrow$ دلتا منفی

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

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

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

الف) $y \leq \sqrt{4 - x} + \sqrt{x - 2} \rightarrow \begin{cases} 4 - x \geq 0 \rightarrow x \leq 4 \\ x - 2 \geq 0 \rightarrow x \geq 2 \end{cases}$

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

ب) $y \leq \frac{x^2 + 1}{x^2 + 1} \rightarrow x^2 + 1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow x \in \mathbb{R}$

iR

ج) $y \leq \frac{\sqrt{x - 2}}{x - f} \rightarrow \begin{cases} x - f \neq 0 \rightarrow x \neq f \\ x - 2 \geq 0 \rightarrow x \geq 2 \end{cases}$

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

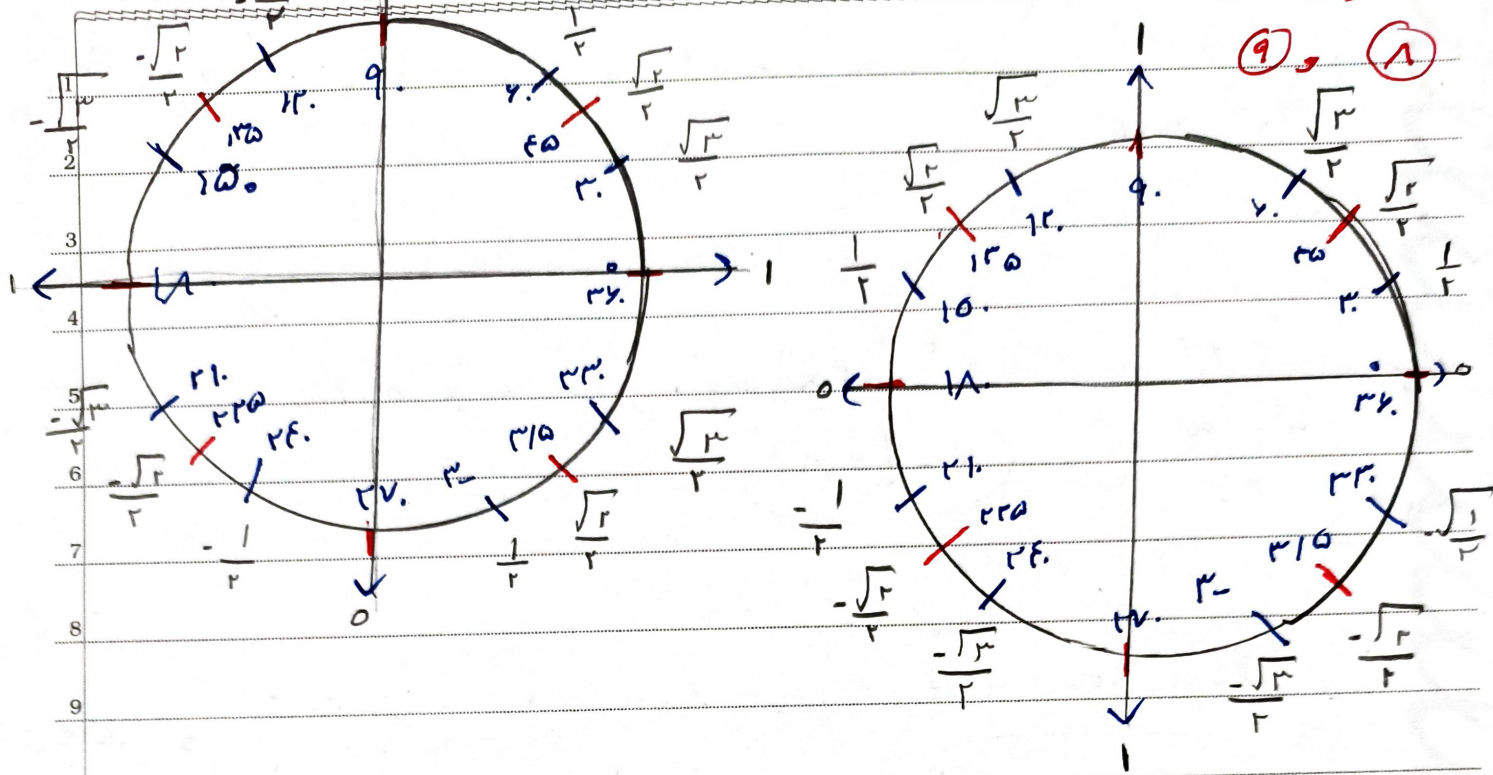
د) $y \leq \frac{x^2 + f}{|x| + x^2} \rightarrow |x| + x^2 \neq 0 \rightarrow x \neq 0$

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

Subject.

Day. Month. Year.

ستایش حسن زاده



① و ⑨

الف) $\frac{2\pi}{3} \rightarrow \cos 120^\circ \rightarrow -\frac{1}{2}$ قرینه $\frac{1}{2} \rightarrow \sin 150^\circ, \sin 210^\circ$ ⑩

$\rightarrow \sin \frac{5\pi}{6}, \sin \frac{\pi}{6}$

ب) $\frac{11\pi}{6} \rightarrow \cos 330^\circ \rightarrow \frac{\sqrt{3}}{2}$ قرینه $-\frac{\sqrt{3}}{2} \rightarrow \sin 240^\circ, \sin 30^\circ$

$\rightarrow \sin \frac{4\pi}{3}, \sin \frac{2\pi}{3}$