

$$f = \{(1, 2a), (1, a^2 + 3), (2, 3a)\}$$

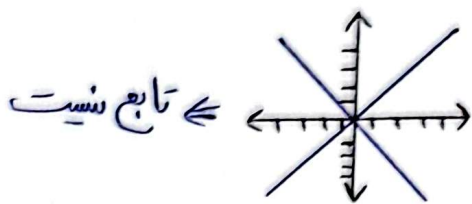
$$2a = a^2 + 3 \Rightarrow a^2 - 2a + 3 = 0$$

$$(a-1)(a-3) = 0 \Rightarrow$$

$$\boxed{a = 1 \text{ یا } 3}$$

$$a = \{1, 3\}$$

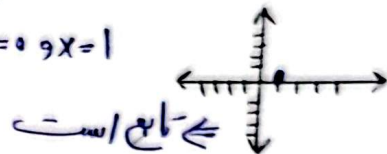
الف) $|y| = |x|$



ب) $|y| + \sqrt{x-1} = 0$

$$\underbrace{|y|}_{\geq 0} = -\underbrace{\sqrt{x-1}}_{\geq 0} \Rightarrow (\text{اشتراک فقط در صفر}) \Rightarrow$$

$$|y| = 0 \Rightarrow y = 0, x = 1$$



الف) $|y-1| = \sqrt{x-2}$ $x=3 \Rightarrow |y-1|=1 \Rightarrow y-1 = \pm 1 \Rightarrow y = 2$ $y = 0$ تابع نیست

ب) $y^{\infty} - y = -\frac{x^2}{y}$ $x=0 \Rightarrow y^{\infty} = y \Rightarrow y = \begin{cases} 1 \\ 0 \end{cases}$ تابع نیست

ج) $\sin^2 x + \cos^2 \frac{y}{2} = 1$ $\sin x = 0 \Rightarrow \cos^2 \frac{y}{2} = 1 \Rightarrow \frac{y}{2} = \begin{cases} 0 \Rightarrow y = 0 \\ \pi \Rightarrow y = 2\pi \end{cases}$ $y = \{0, 2\pi\}$ تابع نیست

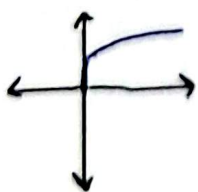
د) $2xy = x$ $x=y \Rightarrow 2y^2 = y \Rightarrow y = \begin{cases} 1 \\ 0 \end{cases}$ تابع نیست

الف) $x^2 + |y-1| = 4x$ if $x=3 \Rightarrow 9 + |y-1| = 12 \Rightarrow$

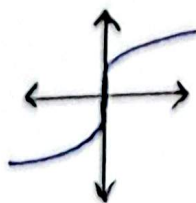
$$|y-1| = 3 \Rightarrow y = 4 \text{ و } -2 \Rightarrow \text{تابع نیست}$$

ب) $y^{\infty} + 3x = 0 \Rightarrow \begin{cases} y_1^{\infty} = -3x_1 \\ y_2^{\infty} = -3x_2 \end{cases} \xrightarrow{x_1=x_2} \begin{cases} y_1^{\infty} = y_2^{\infty} \\ y_1 = y_2 \end{cases} \Rightarrow \text{تابع است}$

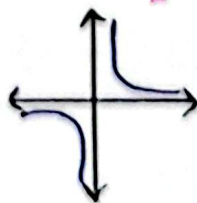
الف) $y = \sqrt{x}$



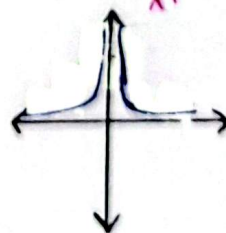
ب) $y = \sqrt[3]{x}$

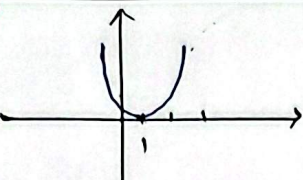
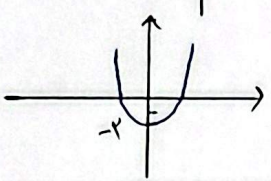
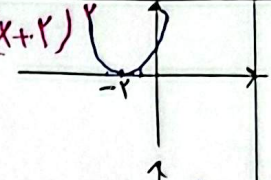
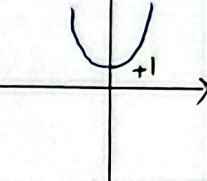
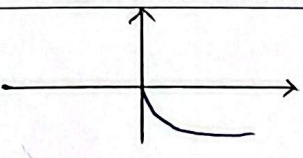
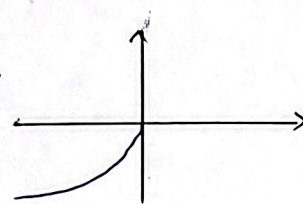
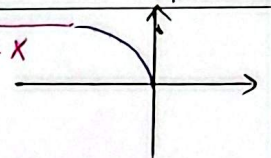
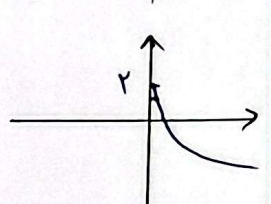
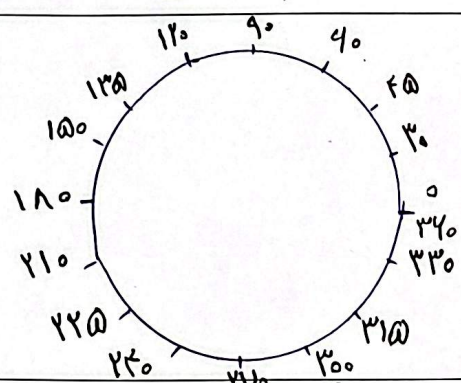
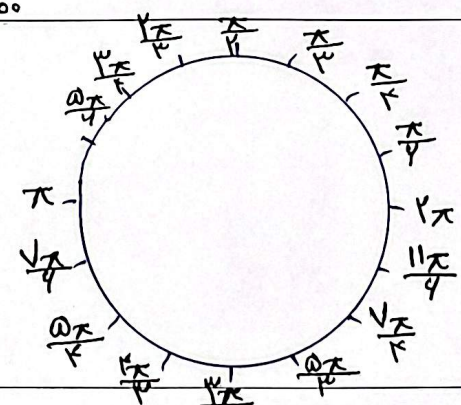


ج) $y = \frac{1}{x^3}$



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الف) $y = (x-1)^2$  ج) $y = x^2 - 4$ 	ب) $y = (x+2)^2$  د) $y = x^2 + 1$ 	٦
الف) $y = -\sqrt{x}$  ج) $y = -\sqrt{-x}$ 	ب) $y = \sqrt{-x}$  د) $y = \sqrt{x} + 2$ 	٧
		٨
		٩
الف) $\cos 120^\circ = -\frac{1}{2}$ ج) $\cos \frac{2\pi}{3} = -\frac{1}{2}$	ب) $\sin 180^\circ = \frac{1}{2}$ د) $\sin \frac{11\pi}{6} = -\frac{1}{2}$	١٠