

برای تابع بودن $f = \{(1, 2a), (1, a^2 + 3), (2, 3a)\}$ $f_a = a^2 + 3 \Rightarrow a^2 - f_a + 3 = 0$

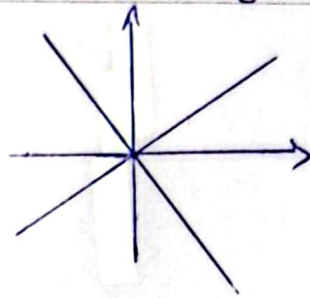
طبق شرط $a + b + c = 0$ $\Rightarrow \begin{cases} a = 1 \\ a = 3 \end{cases} \Rightarrow$

ا) تابع است $f = \{(1, 2), (1, 4), (2, 6)\}$ اگر $a = 3$

تابع است $f = \{(1, 4), (1, 4), (2, 6)\}$ اگر $a = 1$

تابع f برای مقادیر $a = 3$ و $a = 1$ تابع است.

الف) $|y| = |x| \Rightarrow$



تابع نیست چون فقط تا یک آن را در بیرون از نقطه قطع می کند.

ب) $|y| + \sqrt{x-1} = 0$

$\Rightarrow |y| = 0 \Rightarrow y = 0$

$\Rightarrow \sqrt{x-1} = 0 \Rightarrow x = 1$



تابع است چون فقط در یک نقطه آن را قطع می کند.

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

ب) $y^2 - y = \frac{x^2}{y}$ $x=0 \Rightarrow y^2 - y = 0 \Rightarrow y=0$ تابع نیست

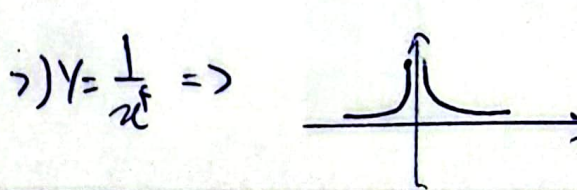
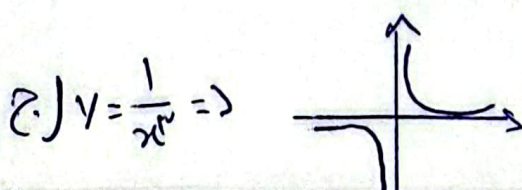
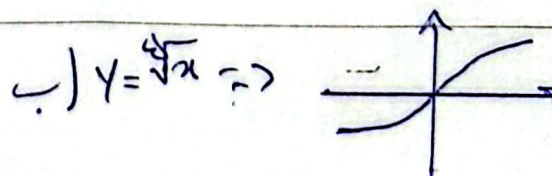
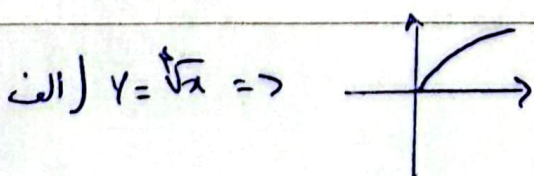
ج) $\sin^2 x + \cos^2 \frac{y}{2} = 1 \Rightarrow \cos^2 \frac{y}{2} = 1 - \sin^2 x \Rightarrow \cos^2 \frac{y}{2} = \cos^2 x \Rightarrow \frac{y}{2} = x \Rightarrow y = 2x$ تابع نیست

د) $2\pi y = x \Rightarrow y \in \mathbb{R}$ تابع نیست

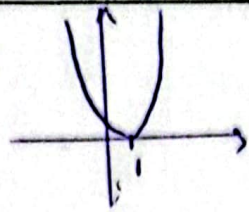
الف) $x^2 + |y-1| = 4x \Rightarrow |y-1| = -x^2 + 4x \Rightarrow |y-1| = 3$

$\Rightarrow \begin{cases} y = 4 \\ y = -2 \end{cases}$ تابع نیست

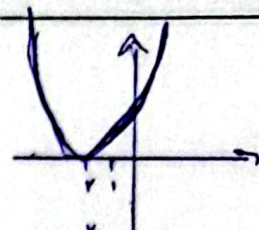
ب) $y^2 + 3x = 0 \Rightarrow \begin{cases} y_1^2 = -3x_1 \\ y_2^2 = -3x_2 \end{cases} \Rightarrow y_1^2 = y_2^2 \Rightarrow y_1 = y_2$ تابع است



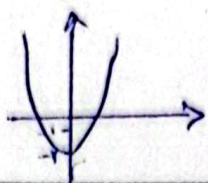
الف) $y = (x-1)^2 \Rightarrow$



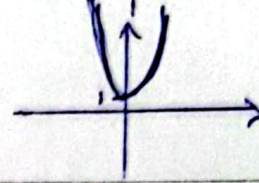
ب) $y = (x+2)^2 \Rightarrow$



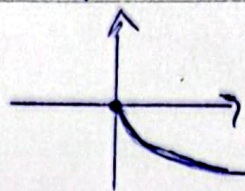
ج) $y = x^2 - 2 \Rightarrow$



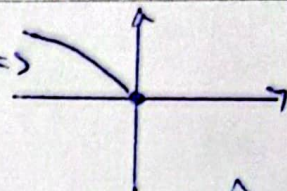
د) $y = x^2 + 1 \Rightarrow$



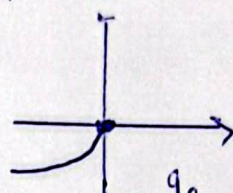
الف) $y = \sqrt{x} \Rightarrow$



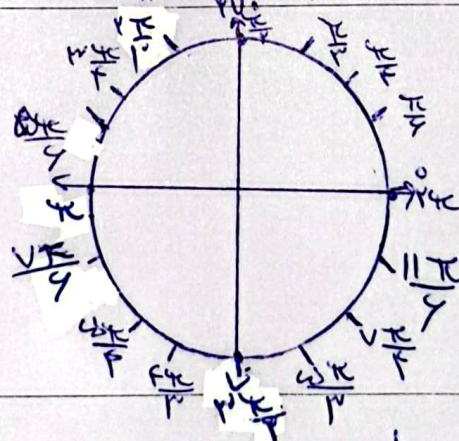
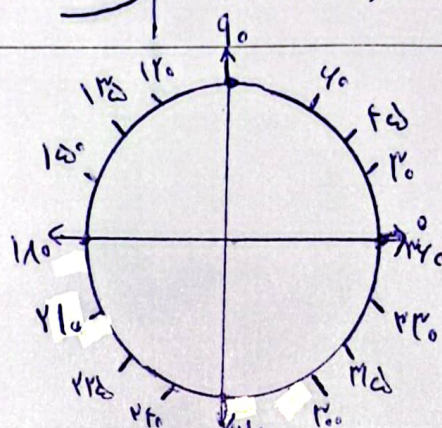
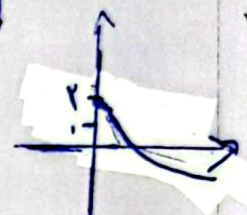
ب) $y = \sqrt{-x} \Rightarrow$



ج) $y = -\sqrt{x} \Rightarrow$



د) $y = -\sqrt{x+2} \Rightarrow$



الف) $\cos 120^\circ = -\frac{1}{2}$

ب) $\sin 150^\circ = \frac{1}{2}$

ج) $\cos \frac{4\pi}{3} = -\frac{1}{2}$

د) $\sin \frac{7\pi}{6} = -\frac{1}{2}$