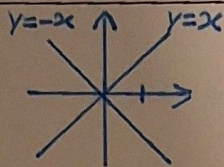


$$f = \{(1, 4a), (1, a^2 + 3), (1, 3a)\}$$

برای تابع بودن، اگر در این‌ها یکی از اعداد یکسان بود باید در این‌ها هم باید یکیان باشند.
 $4a = a^2 + 3 \rightarrow a^2 - 4a + 3 = 0 \rightarrow (a-1)(a-3) = 0 \rightarrow a = 1, 3$

۱

الف) $|y| = |x| \rightarrow y = \pm x$



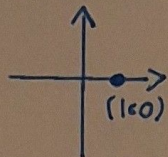
تابع نیست، زیرا به ازای یک x ، دو y وجود دارد

۲

ب) $|y| + \sqrt{x-1} = 0$

$\downarrow \quad \downarrow$
 نامنفی + نامنفی = 0

$\rightarrow y = 0, x - 1 = 0 \rightarrow x = 1$



تابع است، زیرا به ازای یک x ، یک y وجود دارد

الف) $|y-1| = \sqrt{x-1} \xrightarrow{x=3} |y-1| = \sqrt{3-1} \rightarrow |y-1| = 1 \rightarrow y = 0, 2 \times$ تابع نیست

ب) $y^2 - y = \frac{x^2}{y} \xrightarrow{x=0} y^2 - y = 0 \rightarrow y(y-1) = 0 \rightarrow y = 0, 1 \times$ تابع نیست

ج) $\sin^2 x + \cos^2 \frac{y}{y} = 1 \xrightarrow{x=90} 1 + \cos^2 \frac{y}{y} = 1 \rightarrow \cos^2 \frac{y}{y} = 0 \rightarrow y = 90, 270 \times$ تابع نیست

د) $2xy = x \xrightarrow{x=0} 2x \times y = 0 \rightarrow 0 \times y = 0 \rightarrow y = \mathbb{R} \times$ تابع نیست

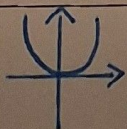
۳

الف) $x^2 + |y-1| = 4x \xrightarrow{x=1} 1 + |y-1| = 4 \rightarrow |y-1| = 3 \rightarrow y = -2, 4 \times$ تابع نیست

ب) $y^2 + 3x = 0 \rightarrow y^2 = -3x \rightarrow y = \pm \sqrt{-3x} \checkmark$ به ازای یک x ، یک y وجود دارد.
 تابع هست

۴

الف) $y = \sqrt{x}$



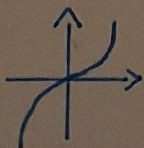
زوج = فرد

ج) $y = \frac{1}{x^3}$



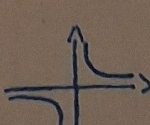
فرد = زوج

ب) $y = \sqrt{x}$



فرد = فرد
 زوج = فرد

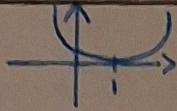
د) $y = \frac{1}{x^4}$



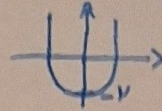
زوج = زوج

۵

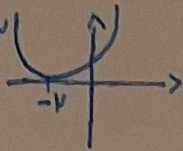
$$131) y = (x-1)^{\nu}$$



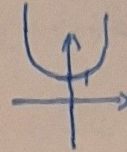
$$132) y = x^{\nu} - \nu$$



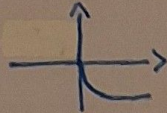
$$133) y = y = (x+\nu)^{\nu}$$



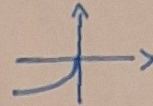
$$134) y = x^{\nu} + 1$$



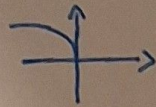
$$135) y = -\sqrt{x}$$



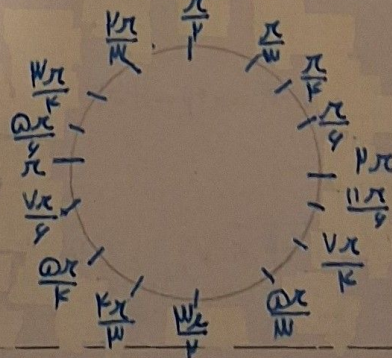
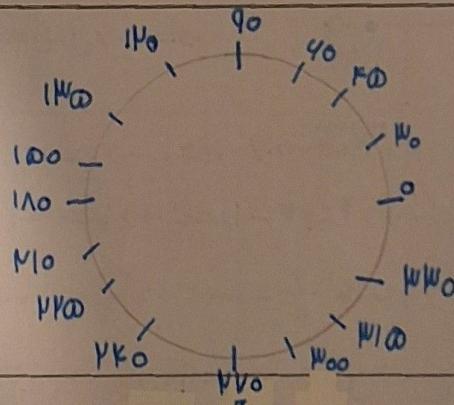
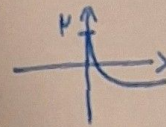
$$136) y = -\sqrt{-x}$$



$$137) y = \sqrt{-x}$$



$$138) y = -\sqrt{x} + \nu$$



$$139) \cos 170^{\circ} \rightarrow \left| \frac{-1}{\sqrt{\nu}} \right| \rightarrow \cos 170^{\circ} = -\frac{1}{\nu}$$

$$140) \sin 100^{\circ} \rightarrow \left| \frac{-\sqrt{\nu}}{\nu} \right| \rightarrow \sin 100^{\circ} = \frac{1}{\nu}$$

$$141) \cos \frac{17\pi}{\nu} \rightarrow \frac{17\pi}{\nu} = 170^{\circ} \rightarrow \left| \frac{1}{\nu} \right| \rightarrow \cos 170^{\circ} = -\frac{1}{\nu}$$

$$142) \sin \frac{11\pi}{\nu} \rightarrow \frac{11\pi}{\nu} = 110^{\circ} \rightarrow \left| \frac{\sqrt{\nu}}{\nu} \right| \rightarrow \sin 110^{\circ} = \frac{1}{\nu}$$