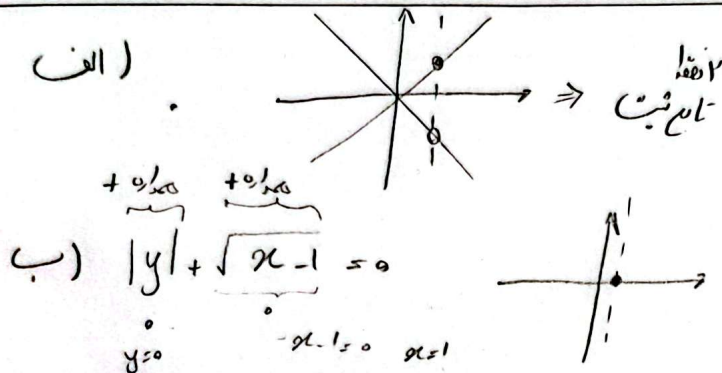


الف) $a^2 + 3 = 4a \Rightarrow a^2 - 4a + 3 = 0$
 $a = 1$
 $a = 3$

$f = \{(a, b), (a, c)\}$
 در صورتی تابع است که $b \neq c$ باشد $\Leftarrow$

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برای تابع بودن در نمودار باید خط عمودی
 محور y تنها یک نقطه را قطع کند پس $\Leftarrow$

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الف) $x \Rightarrow |y-1| = 1 \Rightarrow y = 2$
 $y = 0$

ب) $y^3 - y = \frac{x^2}{4} \Rightarrow y(y^2 - 1) = 0 \Rightarrow y = 0$
 $y = \pm 1$
 $(y^2 + 1)(y + 1)(y - 1)$

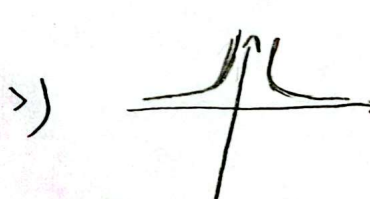
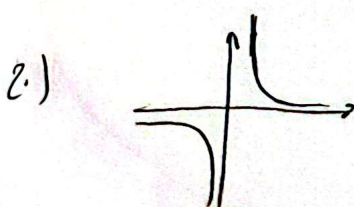
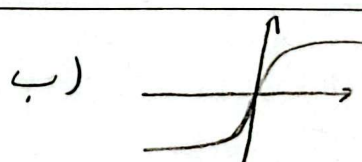
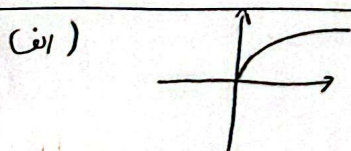
ج) $\sin^2 x + \cos^2 \frac{y}{4} = 1 \Rightarrow 1 + \cos^2 \frac{y}{4} = 1 \Rightarrow \cos^2 \frac{y}{4} = 0$
 $y = \pi, 3\pi, \dots$
 $y = -\pi, -3\pi, \dots$

د) $x \Rightarrow y \in \mathbb{R}$

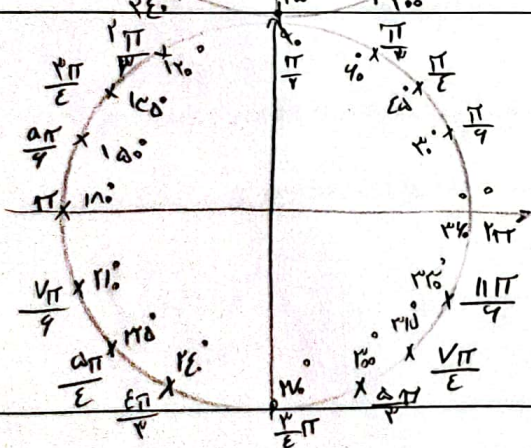
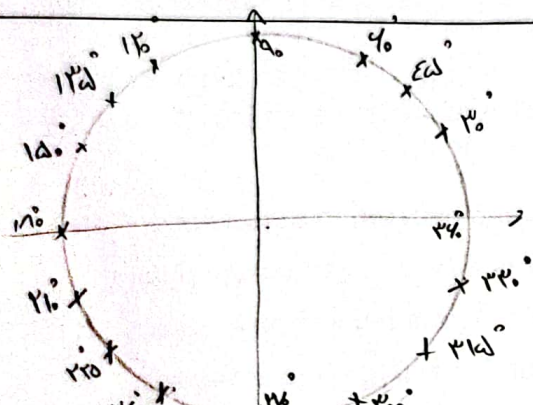
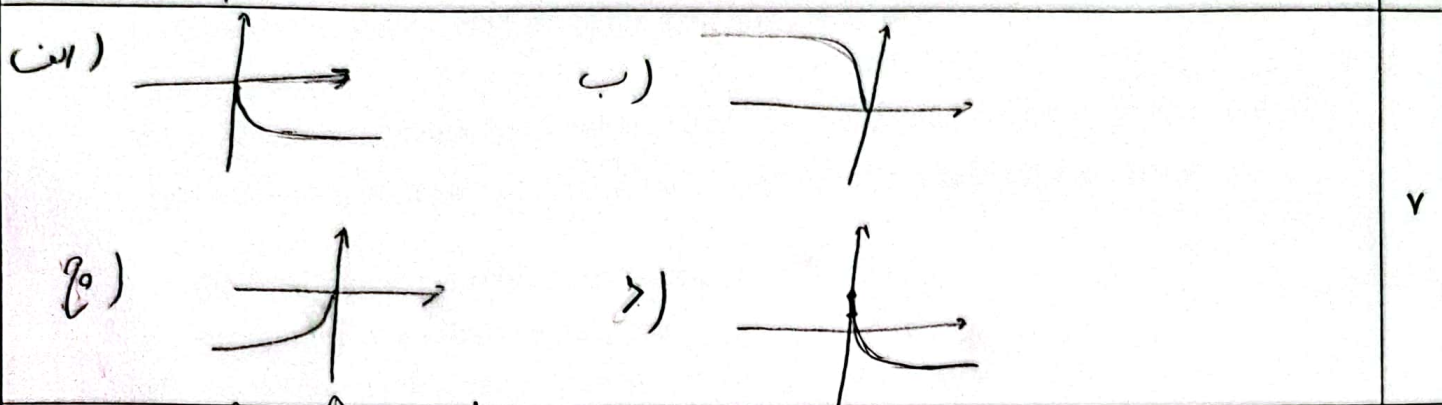
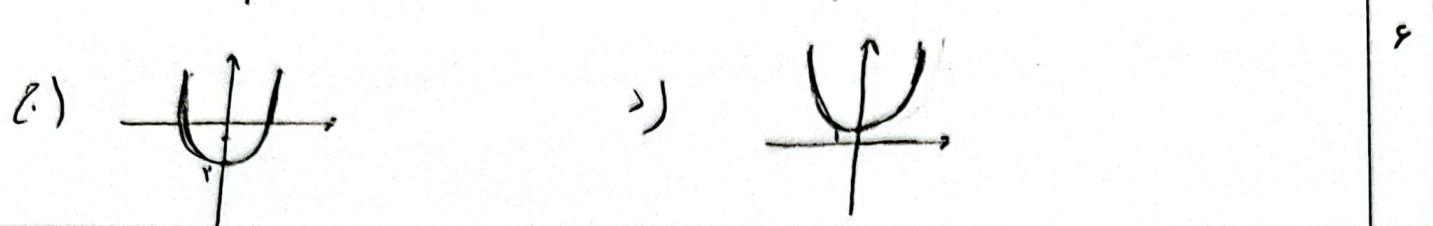
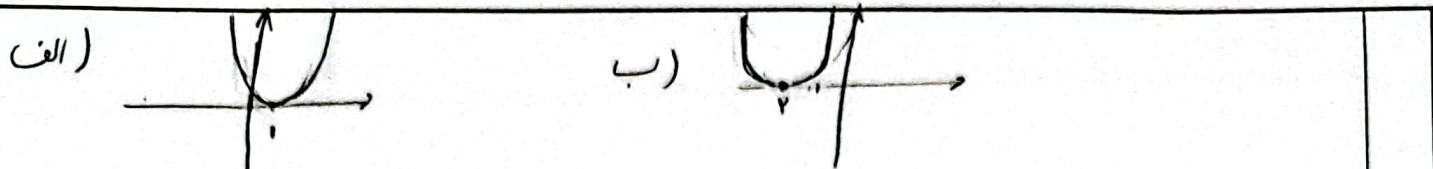
الف) $x^2 + |y-1| = 4x \Rightarrow x=1 \Rightarrow |y-1| = 3 \Rightarrow y = 4$
 $y = -2$

ب) $\text{if } (x, y_1) \in f \Rightarrow y_1 = y_2 \Rightarrow y^a = -3x$
 $\text{if } (x, y_2) \in f \Rightarrow y^a = -3x$

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الف) $\cos 180^\circ = -\frac{1}{1}$

ب) $\sin 180^\circ = \frac{1}{1}$

ج) $\cos \frac{5\pi}{6} = \cos 150^\circ = -\frac{1}{2}$

د) $\sin \frac{11\pi}{6} = \sin 330^\circ = -\frac{1}{2}$

