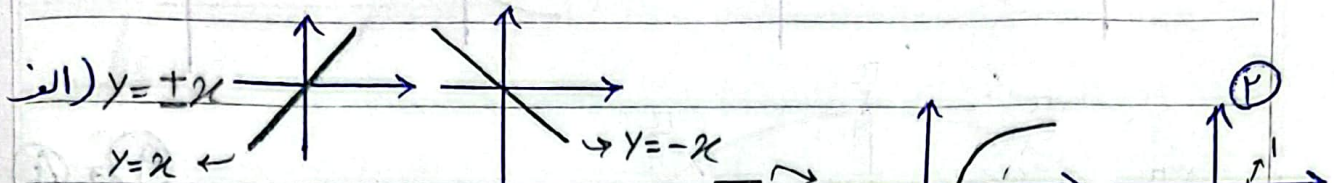


$$f(x) = x^2 + 3 \rightarrow x^2 + 3 - 4x = 0 \rightarrow (x-1)(x-3) = 0 \rightarrow \begin{cases} x=1 \\ x=3 \end{cases} \quad (1)$$



ب) $|y| = -\sqrt{x-1} \rightarrow y = \pm \sqrt{x-1}$

$y = \sqrt{x-1}$ and $y = -\sqrt{x-1}$

ج) $x=2 \rightarrow |y-1| = 2 \rightarrow y-1 = \pm 2 \rightarrow \begin{cases} y=3 \\ y=-1 \end{cases} \rightarrow \text{X ج. ل.}$

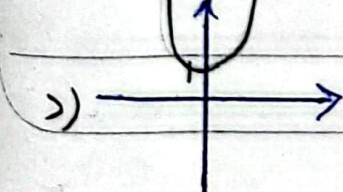
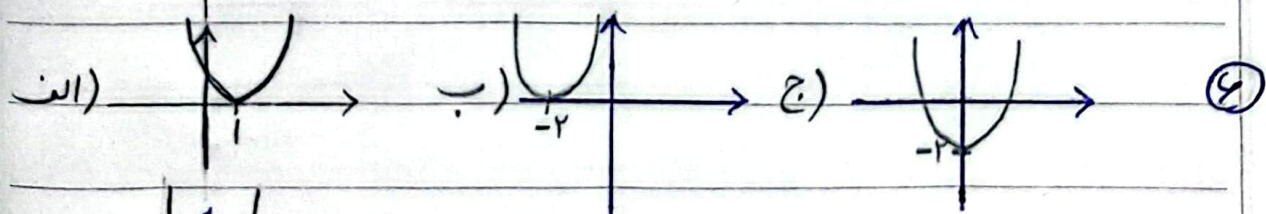
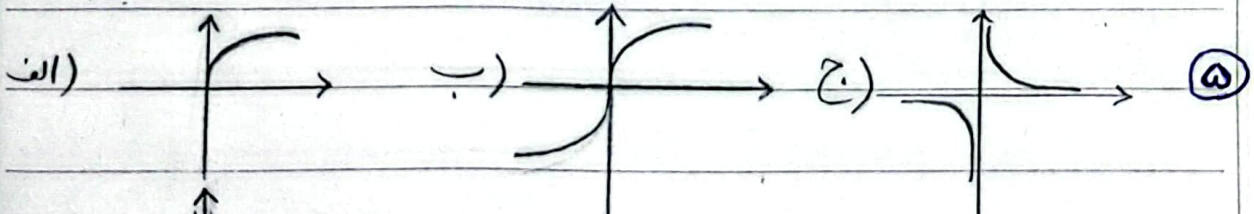
د) $y(y^2-1) = y(y^2+1)(y^2-1) = y(y^2+1)(y-1)(y+1) = 0 \rightarrow \begin{cases} y=0 \\ y=\pm 1 \end{cases} \rightarrow \text{X ج. ل.}$

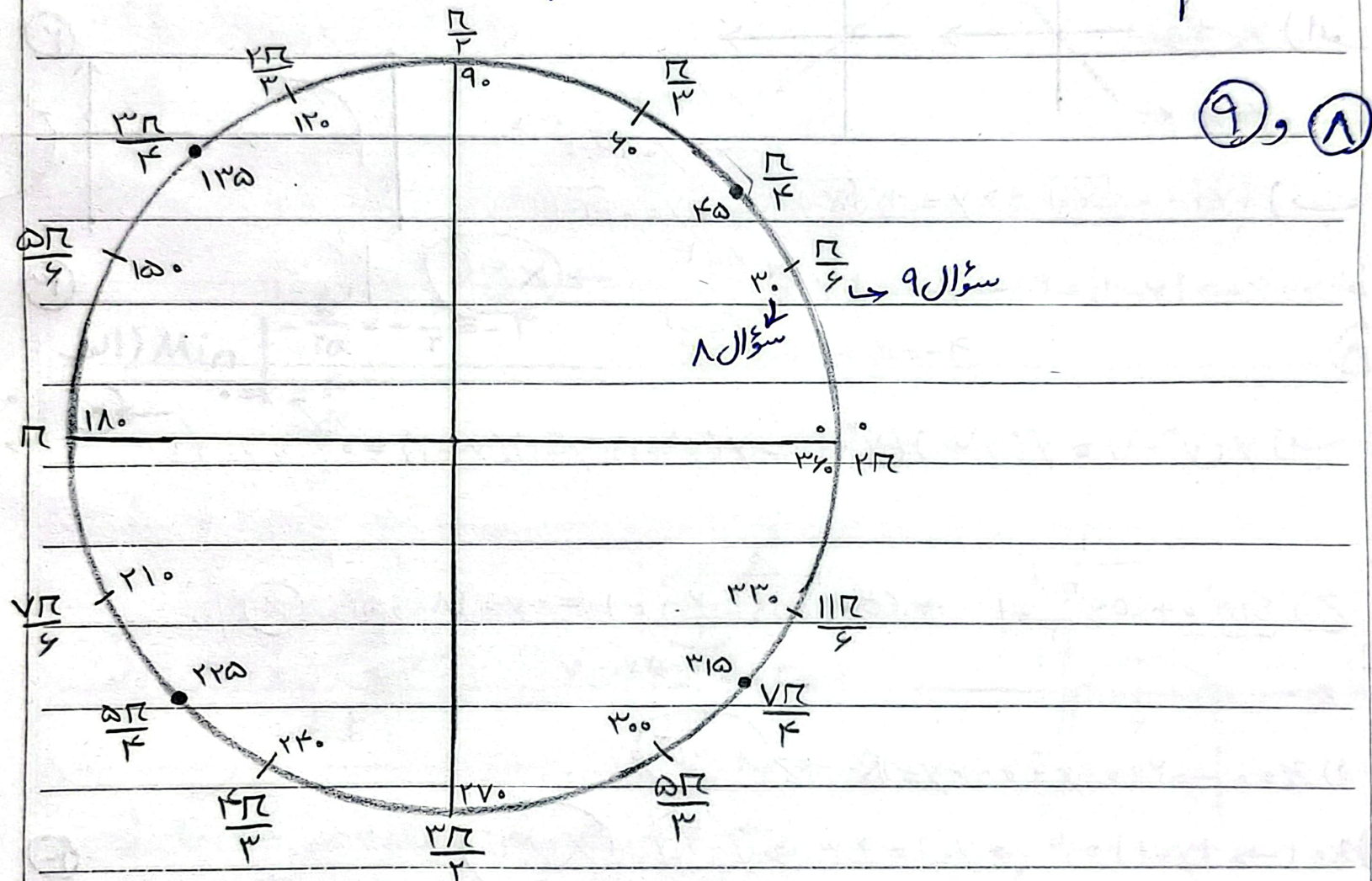
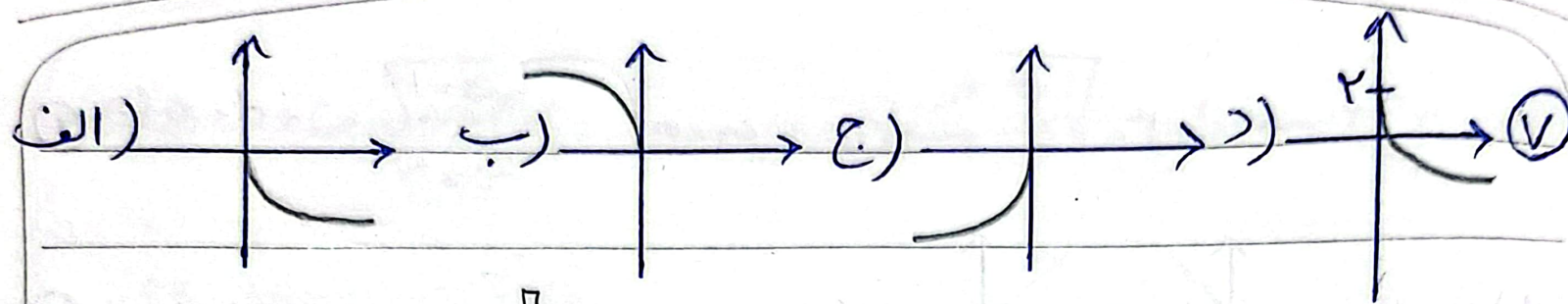
ه) $\sin^2 y + \cos^2 y = 1 \rightarrow \cos(\cos(\frac{y}{2})) = 1 \Rightarrow y = 180^\circ \text{ و } 360^\circ \rightarrow \text{X ج. ل.}$

و) $x=0 \rightarrow 2x \cdot xy = 0 \rightarrow y = \mathbb{R} \Rightarrow \text{X ج. ل.}$

ز) $x=1 \rightarrow |y-1| = 3 \rightarrow y-1 = \pm 3 \rightarrow \begin{cases} y=4 \\ y=-2 \end{cases} \rightarrow \text{X ج. ل.}$

ح) $y_1^2 + 3x_1 = 0$ and $y_2^2 + 3x_2 = 0$
 $x_1 = x_2 \rightarrow y_1^2 + 3x_1 = y_2^2 + 3x_2 \rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2 \checkmark \text{ ج. ل.}$





١٠

الف) $-\frac{1}{2}$ ب) $\frac{1}{2}$ ج) $\frac{1}{2}$ د) $-\frac{1}{2}$