

الف) $\begin{cases} y_1^2 = x_1^2 - 1 \\ y_2^2 = x_2^2 - 1 \end{cases} \quad \begin{cases} x_1 = x_2 \\ y_1 = y_2 \end{cases} \rightarrow y_1 = y_2 \rightarrow y = y \checkmark$

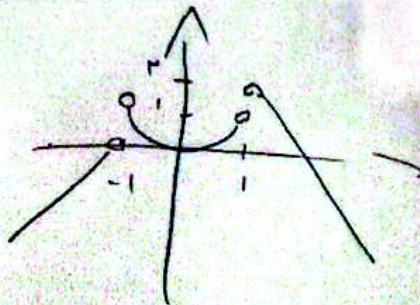
ب) $\begin{cases} y_1^2 + y_2^2 = x_1^2 - 1 \\ y_1^2 + y_2^2 = x_2^2 - 1 \end{cases} \quad \begin{cases} x_1 = x_2 \\ y_1^2 + y_2^2 = x_1^2 - 1 \end{cases} \rightarrow y_1 = y_2 \rightarrow y = y \checkmark$

الف) $|y_1 + ay| = x^2 + 1 \rightarrow |y_1| = x^2 + 1 - ay$ (ب) $y = x^2 - 1$
 $\begin{cases} |y_1| = x^2 + 1 - ay \\ |y_2| = x^2 + 1 - ay \end{cases} \quad \begin{cases} x_1 = x_2 \\ |y_1| = |y_2| = y_1 = \pm y_2 \end{cases}$
 $\sqrt{y} = \sqrt{x}$
 $\sqrt{y_1} = \sqrt{x}$
 $\sqrt{y_2} = \sqrt{x}$
 $\begin{cases} \sqrt{y_1} = \sqrt{x} \\ \sqrt{y_2} = \sqrt{x} \end{cases} \rightarrow y_1 = y_2 = y$
 $\begin{cases} y_1^2 = x^2 + 1 - ay \\ y_2^2 = x^2 + 1 - ay \end{cases} \rightarrow y_1 = y_2 = y$

الف) $\tan \frac{\pi}{4} = 1$ $\frac{\sin \frac{\pi}{4}}{\cos \frac{\pi}{4}} \rightarrow \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} \rightarrow \sqrt{2}$
 ب) $\cot \frac{5\pi}{4} = 1$ $\frac{\cos \frac{5\pi}{4}}{\sin \frac{5\pi}{4}} \rightarrow \frac{-\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} \rightarrow -\sqrt{2}$
 ج) $\tan \frac{3\pi}{4} = -1$ $\frac{\sin \frac{3\pi}{4}}{\cos \frac{3\pi}{4}} \rightarrow \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} \rightarrow -\sqrt{2}$
 د) $\cot \frac{11\pi}{4} = \frac{1}{\sqrt{2}}$

الف) $\cos a = \frac{\sqrt{2}}{2}$ $a \in (0, \pi)$
 $a = \left\{ \pi/4, 7\pi/4 \right\}$
 ب) $\sin a = \frac{1}{2}$ $a \in (0, \pi)$
 $a = \left\{ \pi/6, 5\pi/6 \right\}$

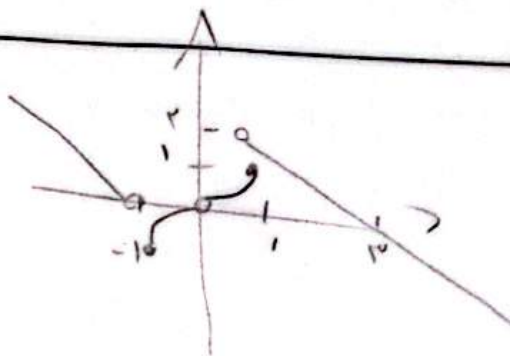
$-2x + 8 > 1$
 $x^2 - 1 < x < 1$
 $x + 1 < -1$



$$-x+3 \quad x > 1$$

$$x^2 \quad -1 \leq x \leq 1$$

$$-x-1 \quad x \leq -1$$



الف) $y = (x-2)(x-3)(x-4)$
 $\begin{matrix} 2 & 3 & 4 \\ \leftarrow & & \end{matrix}$



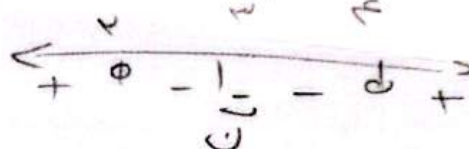
ب) $y = (x-2)(x-3)^2(x-4)$
 $\begin{matrix} 2 & 3 & 4 \\ \leftarrow & & \end{matrix}$



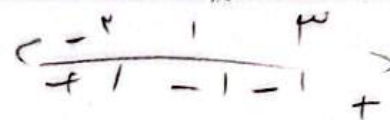
الف) $y = \frac{(x-2)(x-4)}{x-3}$



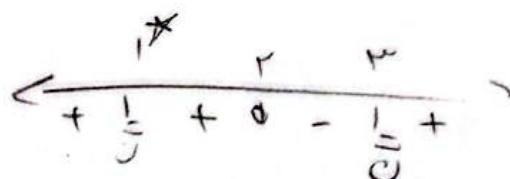
ب) $y = \frac{(x-2)(x-4)}{(x-3)^2}$



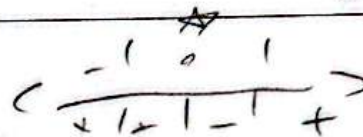
الف) $y = \frac{x^3 - 3x^2 + 2x - 1}{x-1} = \frac{(x-1)^2(x-2)}{x-1}$



ب) $y = \frac{x^3 - 3x^2 + 2x}{x^2 - 5x + 4} = \frac{(x-1)(x-2)}{(x-1)(x-4)}$



الف) $y = \frac{x^4 - x^2}{x^2 + 3x + 2} = \frac{x^2(x^2 - 1)}{(x+1)(x+2)}$



ب) $y = \frac{x^4 + 3x^2 + 2}{x^2 + 2x + 2}$