

$$y^2 = x^2 - 1 \rightarrow \begin{cases} y_1^2 = x_1^2 - 1 \\ y_2^2 = x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^2 = y_2^2 \rightarrow y_1 = y_2 \rightarrow \text{تابع هست}$$

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$$y^2 = x^2 - 1 \rightarrow \begin{cases} y_1^2 = x_1^2 - 1 \\ y_2^2 = x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^2 = y_2^2 \rightarrow y_1 = y_2 \rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2 \rightarrow \text{تابع هست}$$

$$\text{تابع است} \rightarrow \text{بازایی هم دارد} \rightarrow x = 1 \rightarrow y = x^2 - 1 \rightarrow y = 0$$

$$\text{تابع نیست} \rightarrow -1, 1 \rightarrow y = 1 \rightarrow |y| = 1 \rightarrow x = 0 \rightarrow y = x^2 + 1 \rightarrow |y| = 1$$

$$\text{تابع است} \rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2 \rightarrow \begin{cases} y_1^2 = x_1^2 - 1 \\ y_2^2 = x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^2 = y_2^2 \rightarrow y_1 = y_2$$

$$\text{تابع است} \rightarrow \text{بازایی هم دارد} \rightarrow y = 2 \rightarrow y = x^2 - 2 \rightarrow \sqrt{y} = \sqrt{x^2 - 2}$$

$$\text{الف)} \tan \frac{\pi}{4} \rightarrow \frac{\sin \frac{\pi}{4}}{\cos \frac{\pi}{4}} = \frac{\frac{\sqrt{2}}{2}}{\frac{1}{2}} = \sqrt{2}$$

$$\text{ب)} \cot \frac{\sqrt{\pi}}{4} \rightarrow \frac{\cos \frac{\sqrt{\pi}}{4}}{\sin \frac{\sqrt{\pi}}{4}} = \frac{\frac{\sqrt{2}}{2}}{-\frac{1}{2}} = -\sqrt{2}$$

$$\text{ج)} \tan \frac{\pi}{4} \rightarrow \frac{-\frac{1}{2}}{\frac{\sqrt{2}}{2}} = -\frac{1}{\sqrt{2}}$$

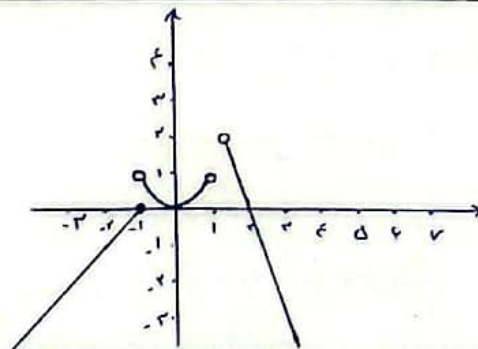
$$\text{د)} \cot 180 \rightarrow \frac{-\frac{1}{2}}{0} \rightarrow \text{تعیین نشده}$$

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$$\text{الف)} \sin \frac{\pi}{4} \rightarrow a = \frac{\pi}{4}, \frac{5\pi}{4} \rightarrow 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}$$

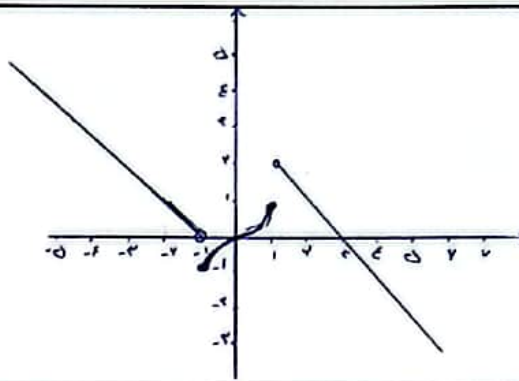
$$\text{ب)} \cos a = \frac{\sqrt{2}}{2} \rightarrow a = \frac{\sqrt{\pi}}{4}, \frac{\pi}{4} \rightarrow 2k\pi + \frac{\sqrt{\pi}}{4}, 2k\pi + \frac{\pi}{4}$$

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تمام نقاط توجیهی است



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الف) $y = (x-2)(x-3)(x-4)$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ - \quad + \quad - \quad + \end{array}$$

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ب) $y = (x-2)(x-3)^2(x-4)$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ + \quad - \quad - \quad + \end{array}$$

الف) $y = \frac{(x-2)(x-4)}{x-3}$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ - \quad + \quad - \quad + \end{array}$$

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ب) $\frac{(x-2)(x-4)}{(x-3)^2}$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ + \quad - \quad - \quad + \end{array}$$

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

$$\begin{array}{c} 1 \quad 1 \quad 2 \\ + \quad - \quad - \quad + \end{array}$$

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

$$\begin{array}{c} 1 \quad 2 \quad 3 \\ + \quad + \quad - \quad + \end{array}$$

الف) $\frac{x^2 - x^2}{x^2 + x + 2} \rightarrow \frac{x^2(x^2 - 1)}{x^2 + x + 2} \leq 0$

$$\begin{array}{c} -1 \quad 0 \quad 1 \\ + \quad - \quad - \quad + \end{array}$$

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ب) $\frac{x^2 - 3x + 2}{x^2 + 2x + 3} \rightarrow \frac{\Delta \rightarrow \text{منفی}}{\Delta \rightarrow \text{منفی}}$