

الف) $\left. \begin{aligned} j_1^2 &= 1 - x_1^2 \\ j_2^2 &= 1 - x_2^2 \end{aligned} \right\} \xrightarrow{x_1, x_2} j_1^2, j_2^2 \Rightarrow j_1 = j_2 \checkmark$ تابع است

ب) $\left. \begin{aligned} j_1^2 + j_2^2 &= 1 - x_1^2 - 1 - x_2^2 \\ j_1^2 + j_2^2 &= -x_1^2 - x_2^2 \end{aligned} \right\} \xrightarrow{x_1, x_2} j_1^2 + j_2^2 \Rightarrow (j_1, j_2) \in \{ (j_1, j_2) \mid j_1^2 + j_2^2 = -x_1^2 - x_2^2 \}$ تابع است

الف) $\left. \begin{aligned} j_1 &= x_1^2 - 1 \\ j_2 &= x_2^2 - 1 \end{aligned} \right\} \xrightarrow{x_1, x_2} j_1, j_2 \checkmark$ تابع است

ب) $x=0 \Rightarrow |j_1| = |j_2|$ تابع نیست

ج) $\left. \begin{aligned} j_1^2 &= -x_1^2 + 2x_1 - 1 \\ j_2^2 &= -x_2^2 + 2x_2 - 1 \end{aligned} \right\} \xrightarrow{x_1, x_2} j_1, j_2 \checkmark$ تابع است

د) $\left. \begin{aligned} \sqrt{j_1} &= 2 - \sqrt{x_1} \\ \sqrt{j_2} &= 2 - \sqrt{x_2} \end{aligned} \right\} \xrightarrow{x_1, x_2}$

$\sqrt{j_1} = \sqrt{j_2} \Rightarrow j_1 = j_2 \checkmark$ تابع است

الف) $\tan \frac{\pi}{6} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

ب) $\cot \frac{\sqrt{\pi}}{6} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

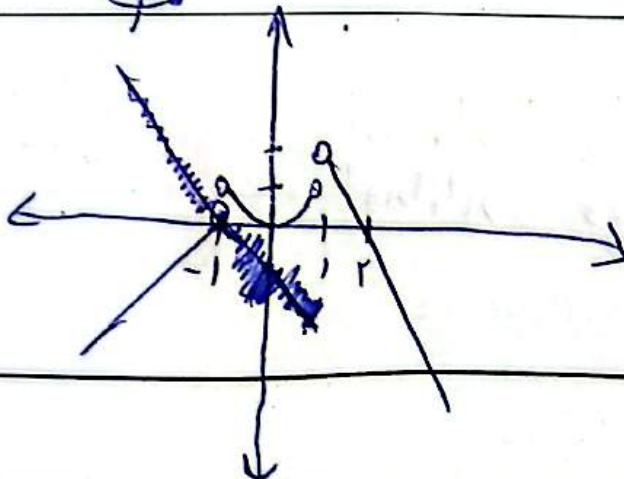
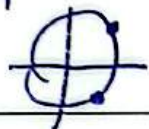
ج) $\tan 330^\circ = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

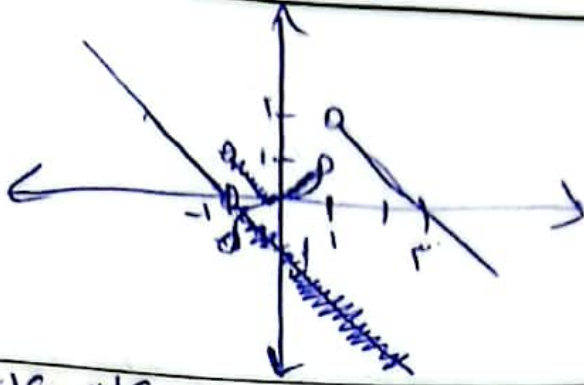
د) $\cot 110^\circ = -\frac{1}{0} \times$ تعریف نشده

الف) $\sin \alpha = \frac{1}{2} \Rightarrow \alpha = \frac{\pi}{6} \text{ یا } \frac{5\pi}{6}$



ب) $\cos \alpha = \frac{\sqrt{2}}{2} \Rightarrow \alpha = \frac{\pi}{4} \text{ یا } \frac{7\pi}{4}$





$$a) (x-1)(x-2)(x-3)$$

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

$$b) (x-1)(x-2)(x-3)$$

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

$$a) \frac{(x-1)(x-2)}{x-3}$$

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

$$b) \frac{(x-1)(x-2)}{(x-3)^2}$$

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

$$a) \frac{(x-1)^2(x+1)}{x-2}$$

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

$$b) \frac{(x-1)^2(x+1)}{(x-2)^2}$$

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

$$a) \frac{x^2(x-1)(x+1)}{x^2+x+1}$$

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

$$b) \frac{x^2+x+1}{x^2+x+1}$$

ریشه های توابع
و مقادیر مثبت است

$$\begin{array}{l} x^2+x+1 \rightarrow \Delta = 1-4 < 0 \\ x^2+x+1 \rightarrow \Delta = 1-4 < 0 \end{array}$$