

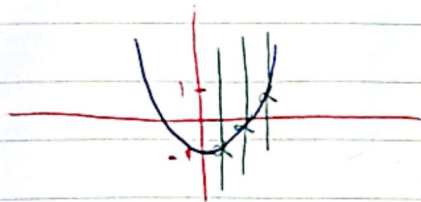
الف) $y^3 = 2x^2 - 1$

$$\begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1 = y_2 \Rightarrow \text{تابع هست}$$

ب) $y^3 + y = 3x^2 - 1$

$$\begin{cases} y_1^3 + y_1 = 3x_1^2 - 1 \\ y_2^3 + y_2 = 3x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1 = y_2 \Rightarrow \text{تابع هست}$$

ج) $y = x^2 - 1$



$\Rightarrow$ تابع هست

د) $|y| + xy = x^2 + 1$

$x=0 \Rightarrow |y| = 1 \Rightarrow \begin{cases} y=1 \\ y=-1 \end{cases} \Rightarrow \text{تابع نیست}$

ه) $y^3 + x^3 = 2x - 1$

$$\begin{cases} y_1^3 = 2x_1 - x_1^3 - 1 \\ y_2^3 = 2x_2 - x_2^3 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \Rightarrow y_1 = y_2 \Rightarrow \text{تابع هست}$$

و) $\sqrt[3]{y} + \sqrt[3]{x} = 2 \Rightarrow \sqrt[3]{y} = 2 - \sqrt[3]{x}$ به ازای هر x یک عددی آید $\Rightarrow$ تابع هست

$$1) \tan \frac{\sqrt{3}}{4} \rightarrow \frac{\sin 40^\circ}{\cos 40^\circ} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

$$2) \cot \frac{\sqrt{3}}{4} \rightarrow \frac{\cos 40^\circ}{\sin 40^\circ} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = +\sqrt{3}$$

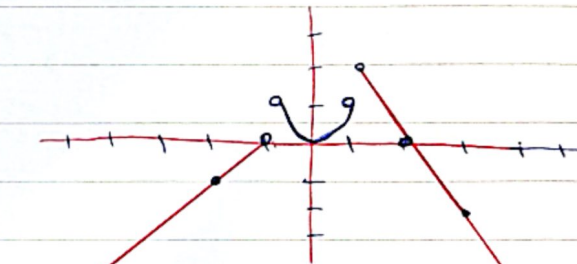
$$3) \tan 44^\circ \rightarrow \frac{\sin 44^\circ}{\cos 44^\circ} = \frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{\sqrt{3}}{4}$$

$$4) \cot 110^\circ \rightarrow \frac{\cos 110^\circ}{\sin 110^\circ} = \frac{-1}{0} \Rightarrow \text{غير معرف}$$

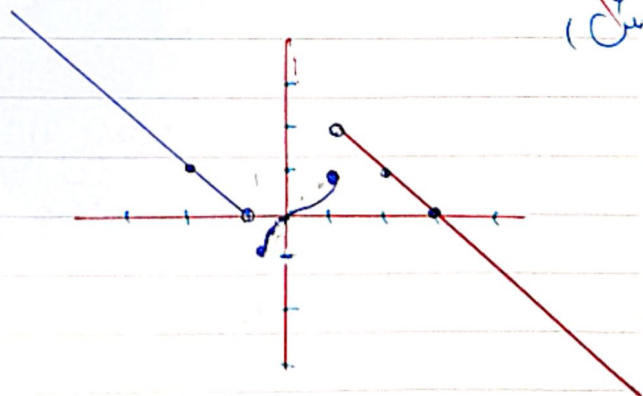
$$1) \sin \alpha = \frac{1}{2} \Rightarrow 30^\circ, 150^\circ \rightarrow \frac{\sqrt{3}}{4}, \frac{5\sqrt{3}}{4}$$

$$2) \cos \alpha = \frac{\sqrt{3}}{2} \Rightarrow 30^\circ, 330^\circ \rightarrow \frac{\sqrt{3}}{4}, \frac{5\sqrt{3}}{4}$$

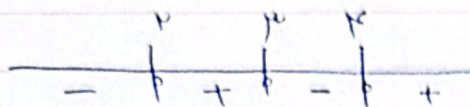
$$f(x) = \begin{cases} -x+1 & x > 1 \\ x^2 & -1 < x < 1 \\ x+1 & x < -1 \end{cases}$$



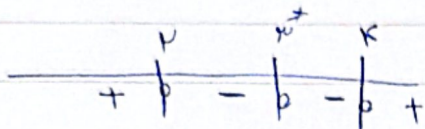
$$f(x) = \begin{cases} -x+1 & x > 1 \\ x^2 & -1 < x < 1 \\ -x-1 & x < -1 \end{cases}$$



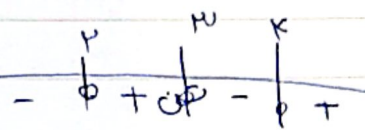
الف) $y = (n-2)(n-3)(n-4) =$



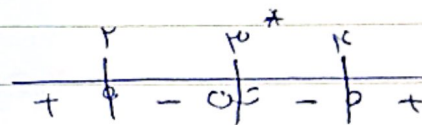
ب) $y = (n-2)(n-3)(n-4)(n-5) =$



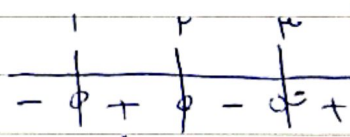
الف) $y = \frac{(n-2)(n-3)}{n-4} \Rightarrow$



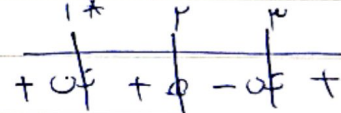
ب) $y = \frac{(n-2)(n-3)}{(n-4)(n-5)} \Rightarrow$



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

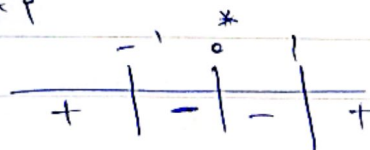


ب) $y = \frac{n^2 - 3n + 2}{n^2 - 4n + 3} = \frac{(n-1)(n-2)}{(n-1)(n-3)} \Rightarrow$



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

Δ منفی است پس ریشه ندارد



ب) $\frac{n^2 + 3n + 2}{n^2 + 2n + 3} = \frac{n^2 + 3n + 2}{n^2 + 2n + 3}$ Δ منفی است = > ریشه ندارد

