

تابع هست

$$y^3 = 2x^2 - 1 \Rightarrow \begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1=x_2} y_1^3 = y_2^3 \Rightarrow y_1 = y_2$$

الف) $y^3 = 2x^2 - 1$

تابع هست

$$y^3 + y = 3x^2 - 1 \Rightarrow \begin{cases} y_1^3 + y_1 = 3x_1^2 - 1 \\ y_2^3 + y_2 = 3x_2^2 - 1 \end{cases} \xrightarrow{x_1=x_2} y_1^3 + y_1 = y_2^3 + y_2 \Rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0$$

$$\Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) + (y_1 - y_2) = 0 \Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1 + 1) = 0$$

$$\Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 2) = 0$$

$$\Rightarrow y_1 = y_2$$

این رابطه برقرار است $\Delta < 0$

$$\Delta = y_2^2 - 4(y_2^2 + 1) = -3y_2^2 - 4 < 0$$

$$\Rightarrow y_1 = y_2$$

الف) $y = x^2 - 1$ (تابع هست) (رسم شکل)

ب) $(y + x)(y + x) = x^2 + 1$ (مقاله نقض)

$$x = 0 \Rightarrow |y| + 0 = 1 \Rightarrow y = \pm 1$$

دارای دو جواب است پس تابع نیست!

ج) $y^3 + x^3 = 2x - 1$ (تعریف ریاضی)

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

تابع هست

د) $\sqrt[3]{y} + \sqrt[3]{x} = 2 \Rightarrow \sqrt[3]{y} = 2 - \sqrt[3]{x} \Rightarrow y = (2 - \sqrt[3]{x})^3$

$$\begin{cases} y_1 = (2 - \sqrt[3]{x_1})^3 \\ y_2 = (2 - \sqrt[3]{x_2})^3 \end{cases} \xrightarrow{x_1=x_2} y_1 = y_2$$

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

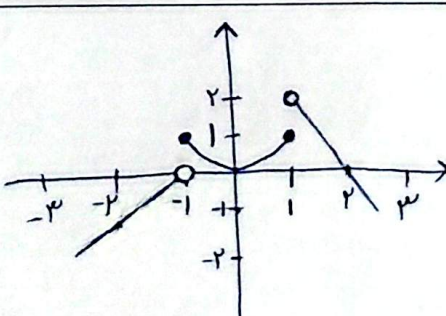
ب) $\cot \frac{\sqrt{3}\pi}{4} = \frac{\cos \frac{\sqrt{3}\pi}{4}}{\sin \frac{\sqrt{3}\pi}{4}} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{\sqrt{3}}{1} = \sqrt{3}$

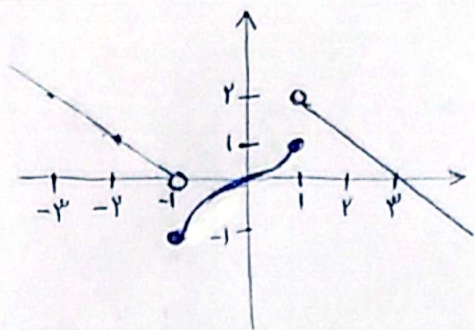
ج) $\tan 330^\circ = \frac{\sin 330^\circ}{\cos 330^\circ} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

د) $\cot 180^\circ = \frac{\cos 180^\circ}{\sin 180^\circ} = \frac{-1}{0} \Rightarrow$ تعریف نشده

الف) $\sin \alpha = \frac{1}{2} \Rightarrow 30^\circ, 150^\circ \Rightarrow \frac{\pi}{6}, \frac{5\pi}{6}$

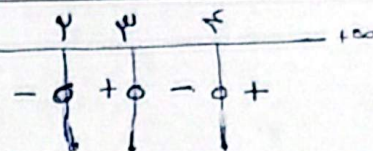
ب) $\cos \alpha = \frac{\sqrt{2}}{2} \Rightarrow 45^\circ, 315^\circ \Rightarrow \frac{\pi}{4}, \frac{7\pi}{4}$



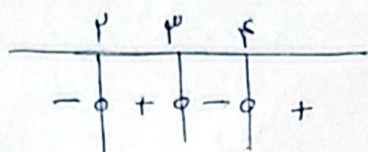


الف) $y = (x-2)(x-3)(x-4) \Rightarrow$ جذورها: 2, 3, 4

$$Df = [2, 3] \cup [4, +\infty)$$



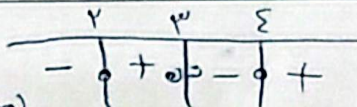
1) $y = (x-2)(x-3)^2(x-4) \Rightarrow 2, 3, 4$: 60



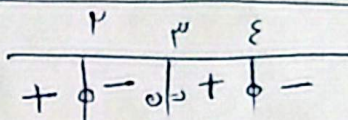
$$Df = [r, w] \cup [t, +\infty)$$

الف) $y = \frac{(x-2)(x-2)}{x-3} \Rightarrow 2, 3, 4$ هي حوا:

$$D \neq [r, w) \cup [k, +\infty)$$



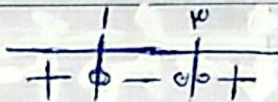
٢٩٣٢٤ : ریسیم ها : $y = \frac{(x-2)(x-8)}{(x-3)^2} \Rightarrow$



$$Df = (-\infty, r] \cup [r, \infty)$$

$$\text{الف) } y = \frac{x^3 - 3x + 2}{x - 3} \Rightarrow \begin{cases} 2x^3 - 3x + 2 = 0 \Rightarrow x = 1 \\ x - 3 = 0 \Rightarrow x = 3 \end{cases}$$

$$Df = (-\infty, 1] \cup (3, +\infty)$$

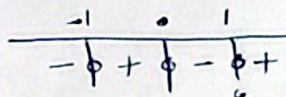


ج) $\frac{x^2 - 3x + 2}{x^2 - 5x + 6} \Rightarrow \begin{cases} x^2 - 3x + 2 = 0 \Rightarrow (x-2)(x-1) = 0 \Rightarrow 1, 2 \\ x^2 - 5x + 6 = 0 \Rightarrow (x-1)(x-3) = 0 \Rightarrow 1, 3 \end{cases}$

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

$$Df = (-\infty, 1) \cup (1, 2] \cup (3, +\infty)$$

$$\frac{x^4 - x^2}{x^2 + x + 2} \Rightarrow -1.901 \text{ سیه ها}$$



$$\Rightarrow y = \frac{x^2 + px + q}{x^2 + rx + s} \Rightarrow D \neq \mathbb{R}$$

بہ ازای بھی اعداد مثبت اسے