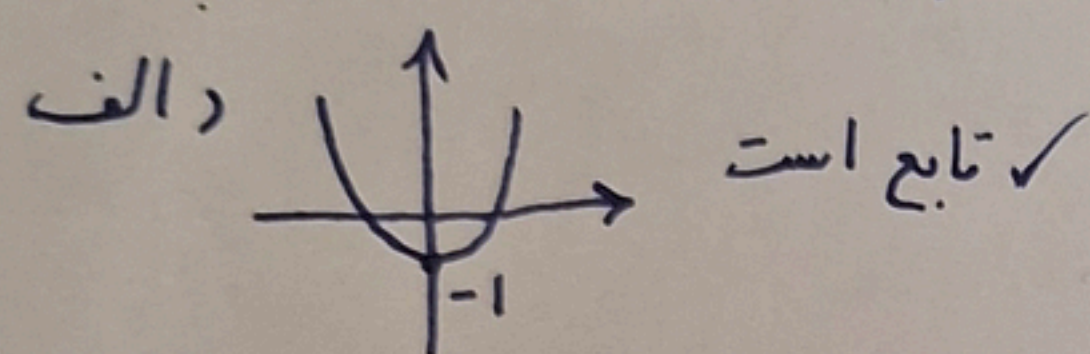


الف) $\begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1=x_2} y_1^3 = y_2^3 \rightarrow \boxed{y_1 = y_2} \checkmark$ هر دو تابع اند

ب) $\begin{cases} y_1^3 + y_1 = 3x^2 - 1 \\ y_2^3 + y_2 = 3x^2 - 1 \end{cases} \xrightarrow{x_1=x_2} y_1^3 + y_1 = y_2^3 + y_2 \rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0 \rightarrow$
 $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + (y_1 - y_2) = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \rightarrow \boxed{y_1 = y_2}$



مثال نقی

ب) $x=0 \rightarrow |y|+0 = 0+1$

$|y|=1 \rightarrow y = \pm 1$ تابع نیست X

ج) $\begin{cases} y_1^3 = -x_1^3 + 2x_1 \\ y_2^3 = -x_2^3 + 2x_2 \end{cases} \xrightarrow{x_1=y_1} y_1^3 = y_2^3$ ریشه ندارد $\Delta < 1$

$\boxed{y_1 = y_2} \checkmark$ تابع است

د) $\begin{cases} \sqrt[3]{y_1} = \sqrt[3]{-x_1^3 + 2x_1} \\ \sqrt[3]{y_2} = \sqrt[3]{-x_2^3 + 2x_2} \end{cases} \xrightarrow{x_1=x_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow \boxed{y_1 = y_2} \checkmark$ هست

الف = $\frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = -\sqrt{3}$

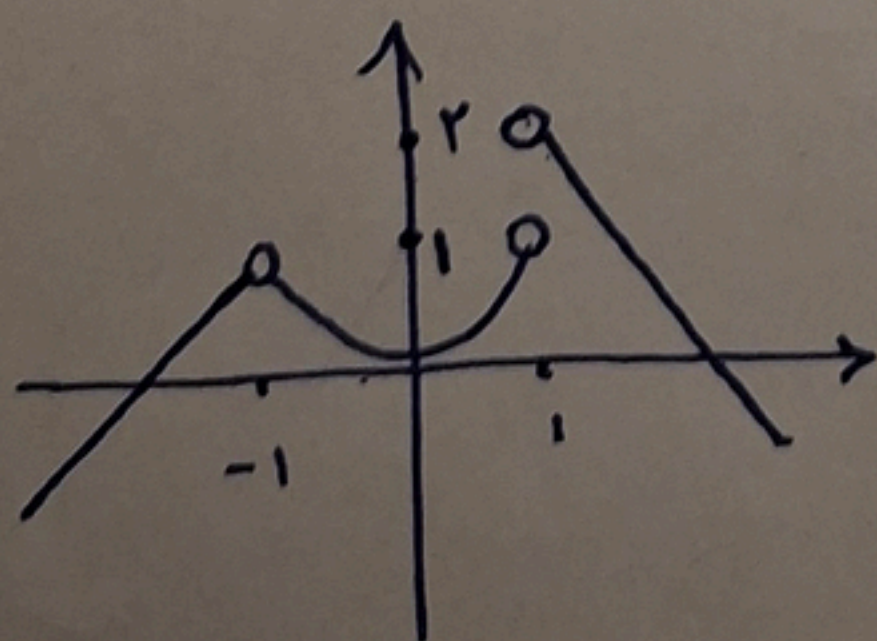
ب = $\frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \sqrt{3}$

ج) $\frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$

د) $\frac{-1}{0} = \text{تعریف نشده}$

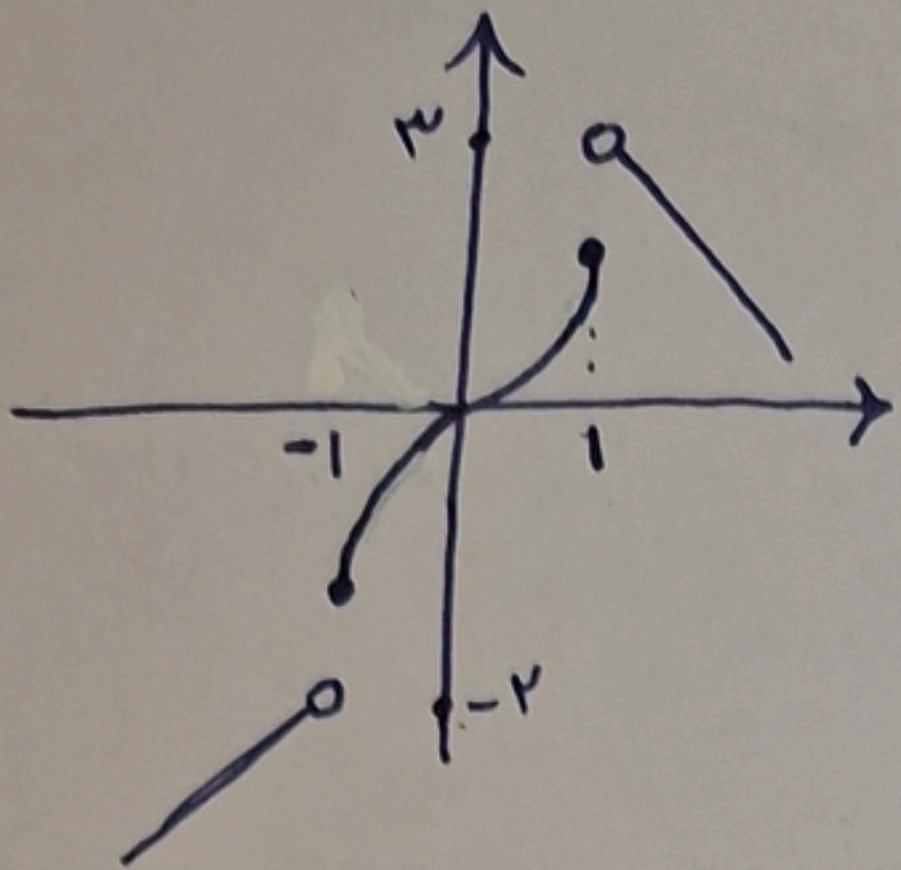
الف) $30^\circ = \frac{\pi}{6}$, $150^\circ = \frac{5\pi}{6}$

ب) $45^\circ = \frac{\pi}{4}$, $315^\circ = \frac{7\pi}{4}$



$\begin{cases} -2x+4 & x > 1 \\ x^2 & -1 < x < 1 \\ x+1 & x < -1 \end{cases} \Rightarrow y = -2(1)+4=2$

$$y = -1 + x^2 \quad (1, 3)$$

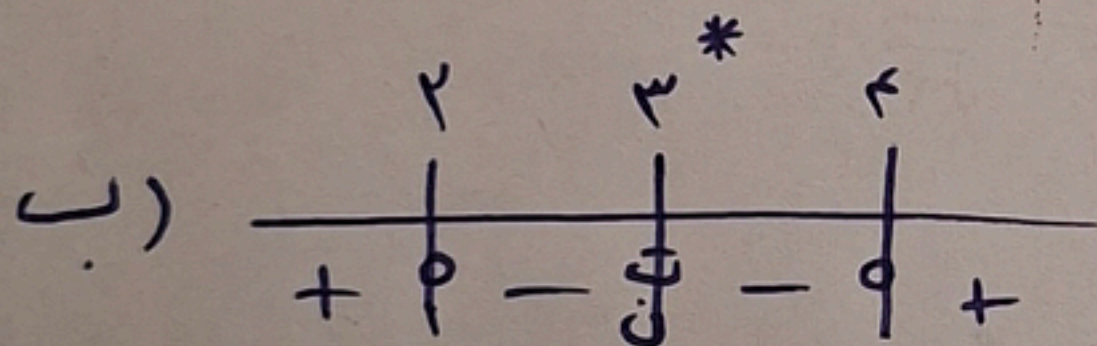
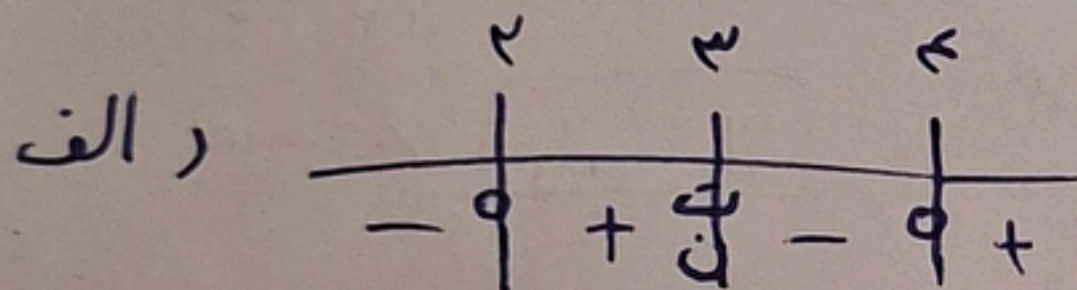
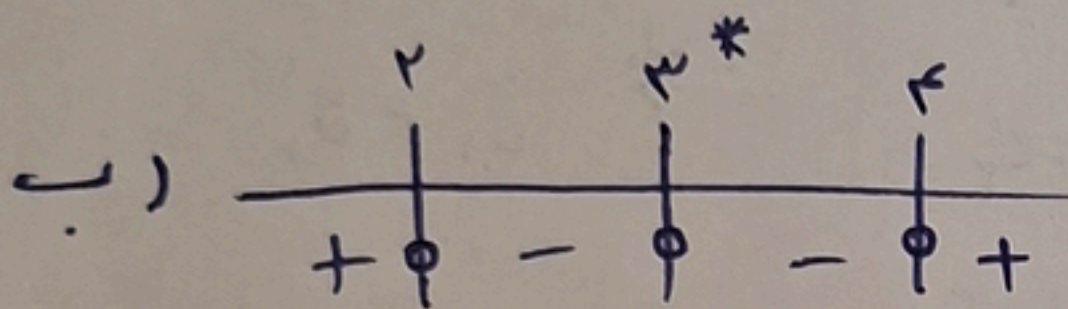
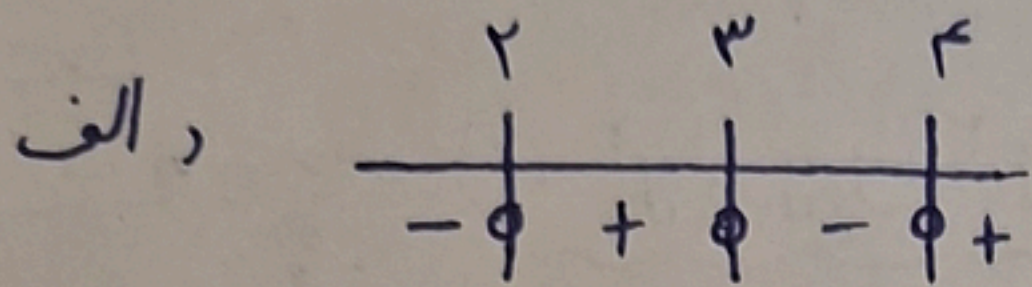


$$-x + 4 \quad x > 1$$

$$x^3 \quad -1 \leq x \leq 1$$

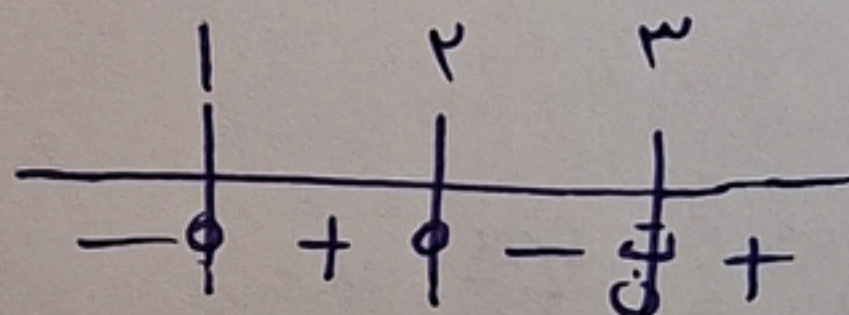
$$-x - 1 \quad x < -1$$

$$y = -1 - x^2 \quad (-1, -2)$$



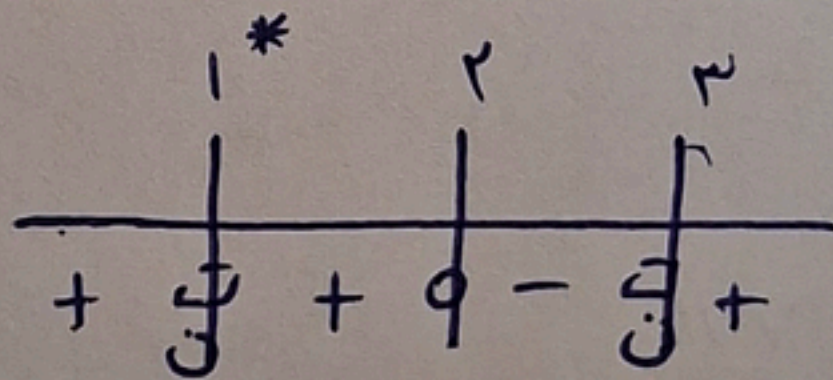
الف

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



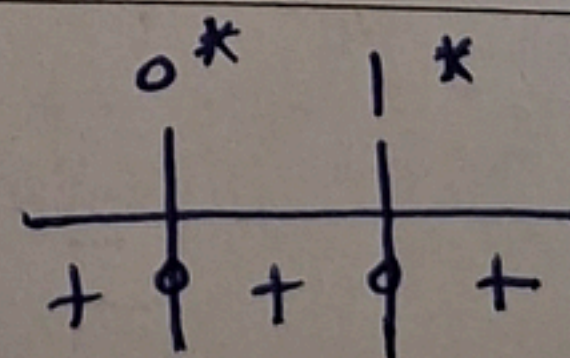
ب

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



الف

$$\frac{x^2(x-1)(x-1)}{x^2+x+2} \rightarrow \text{ریشه ندارد}$$



ب

$$\frac{x^2+3x+4}{x^2+2x+3} \rightarrow \text{ریشه ندارد}$$

☆ همواره مثبت است

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