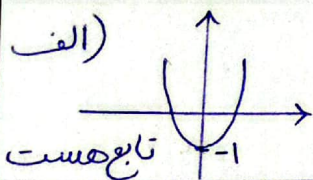


الف) $y_1^3 = 2x_1^2 - 1$
 $y_2^3 = 2x_2^2 - 1$ } تابع هست
 $x_1 = x_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2$

ب) $y_1^3 = 3x_1^2 - 1 - y_1$
 $y_2^3 = 3x_2^2 - 1 - y_2$

$x_1 = x_2 \rightarrow y_1^3 + y_1 = y_2^3 + y_2 \rightarrow y_1^3 + y_1 - y_2^3 - y_2 = 0$

$\rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + y_1 + y_2 + 1) = 0$
 تابع هست - همواره + منفی Δ



ب)

$|y| = x^2 - xy + 1 \Rightarrow y = \begin{cases} x^2 - xy + 1 \\ -(x^2 - xy + 1) \end{cases}$ تابع نیست

ج) $y_1^3 = -x_1^3 + 2x_1 - 1$
 $y_2^3 = -x_2^3 + 2x_2 - 1$ } تابع هست
 $x_1 = x_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2$

$\sqrt[3]{y_1} = -\sqrt[3]{x_1} + 2$
 $\sqrt[3]{y_2} = -\sqrt[3]{x_2} + 2$ } تابع هست
 $\rightarrow y_1 = y_2$

الف) $\rightarrow 60^\circ \left(\frac{\sqrt{3}}{2}, \frac{1}{2} \right) = \boxed{\sqrt{3}}$

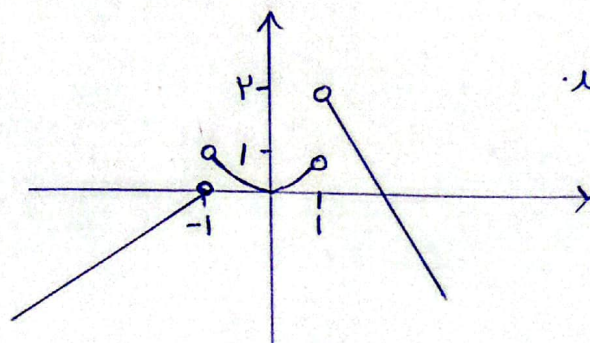
ج) $\left(\frac{-1}{\sqrt{3}}, \frac{1}{2} \right) = \boxed{\frac{-1}{\sqrt{3}}}$

ب) $\rightarrow 210^\circ \left(\frac{-\sqrt{3}}{2}, \frac{1}{2} \right) = \boxed{\sqrt{3}}$

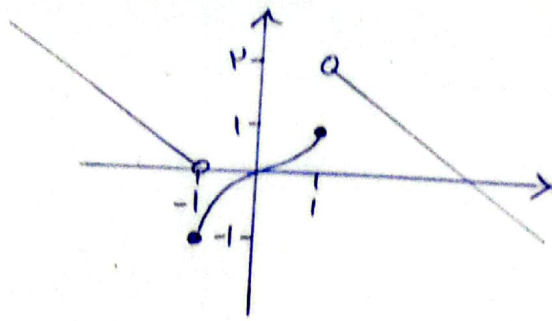
د) $\frac{-1}{0} =$ تعریف نشده

الف) $a = \frac{\pi}{6}, 5\frac{\pi}{6}$ ۳۰ ————— ۱۵۰

ب) $a = \frac{\pi}{4}, 7\frac{\pi}{4}$ ۴۵ ————— ۳۱۵



همه دایره ها تو خالی هستند.



٦

الف) $y = \frac{(x-2)(x-3)(x-4)}{x^2}$

$$\frac{-}{\phi} \frac{2}{\phi} + \frac{3}{\phi} \frac{-}{\phi} \frac{4}{\phi} +$$

ب) $y = \frac{(x-2)(x-3)^2(x-4)}{x^2}$

$$\frac{+}{\phi} \frac{2}{\phi} - \frac{3^*}{\phi} \frac{-}{\phi} \frac{4}{\phi} +$$

٧

الف) $y = \frac{(x-2)(x-4)}{x-3}$

$$\frac{-}{\phi} \frac{2}{\phi} + \frac{3}{\phi} \frac{-}{\phi} \frac{4}{\phi} +$$

ب) $y = \frac{(x-2)(x-4)}{(x-3)^2}$

$$\frac{+}{\phi} \frac{2}{\phi} - \frac{3^*}{\phi} \frac{-}{\phi} \frac{4}{\phi} +$$

٨

الف) $\frac{(x-1)^2(x+2)}{x-3}$

$$\frac{+}{\phi} \frac{-1}{\phi} - \frac{1^*}{\phi} \frac{-}{\phi} \frac{3}{\phi} +$$

ب) $\frac{(x-1)(x-2)}{(x-3)(x-1)}$

$$\frac{+}{\phi} \frac{1^*}{\phi} + \frac{2}{\phi} \frac{-}{\phi} \frac{3}{\phi} +$$

٩

الف) $\frac{x^2(x-1)}{x^2+x+2} \xrightarrow{\Delta} -1$

$$\frac{-}{\phi} \frac{1}{\phi} + \frac{0}{\phi} \frac{-}{\phi} \frac{1}{\phi} +$$

$\Delta = 1 - 1 = -1$

ب) $y = \frac{x^2+3x+2}{x^2+2x+3} \xrightarrow{\Delta} +$

$\Delta = 9 - 14 = -5$

$\Delta = 4 - 12 = -8$

١٠