

الف) $\begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع مستقیم

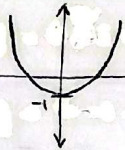
$y_1^3 + y_1 = y_2^3 + y_2 \quad y_1^2 + y_2 y_1 + y_2^2 + 1 = 0$

ب) $\begin{cases} y_1^3 + y_1 = 2x_1^2 - 1 \\ y_2^3 + y_2 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 - y_2^3 + (y_1 - y_2) = 0 \quad y_1 = \frac{-y_2 \pm \sqrt{\Delta}}{2}$

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

الف) $y = x^2 - 1$

« تابع مستقیم »



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

ج) $y^3 + 2x^3 = 2x - 1$
باید بازنویس کنیم تا به فرم $y^3 = 2x - 1 - 2x^3$ درآید
 $y^3 = 2 - 8 - 1 = -7$
 $y = -\sqrt[3]{7} \rightarrow y = \sqrt[3]{-7}$

ب) $x = 0 \rightarrow |y| = 1$
 $y = \pm 1$

$\sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$
تابع مستقیم

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

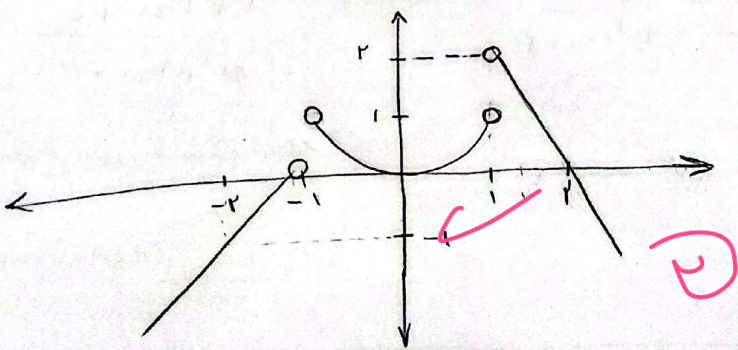
ب) $\cot \frac{\sqrt{3}\pi}{4} = \rightarrow \cot = \frac{\cos}{\sin} = \frac{-\frac{\sqrt{2}}{2}}{-\frac{1}{2}} = \sqrt{2}$

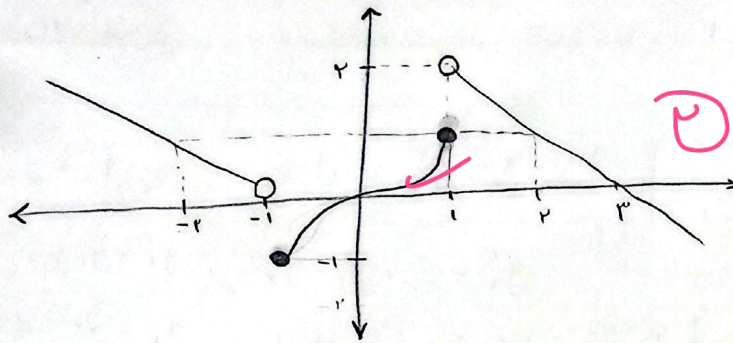
ج) $\tan 150^\circ = \rightarrow \tan = \frac{\sin}{\cos} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$

د) $\cot 110^\circ = \rightarrow \cot = \frac{\cos}{\sin} = \frac{-1}{0} \rightarrow$ تعریف نشده است

الف) $\frac{5\pi}{4}$ و $\frac{\pi}{4}$

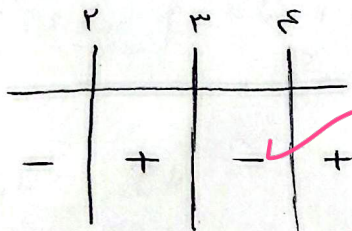
ب) $\frac{\pi}{4}$ و $\frac{5\pi}{4}$



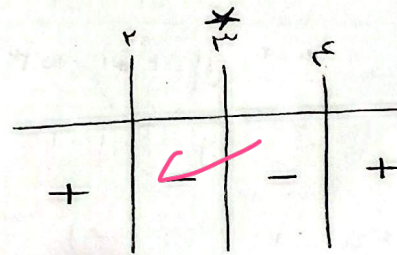


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الف) $(x-2)(x-3)(x-4)$

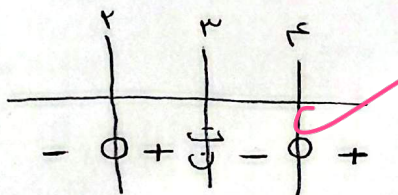


ب) $(x-2)(x-3)^2(x-4)$

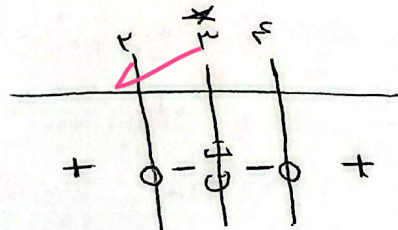


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الف) $\frac{(x-2)(x-4)}{x-3}$

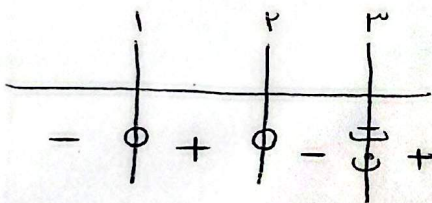


ب) $\frac{(x-2)(x-4)}{(x-3)^2}$

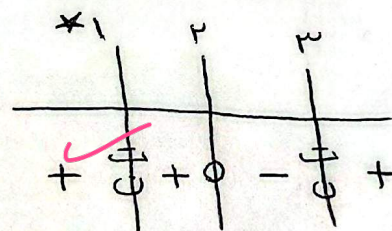


٨

الف) $\frac{(x-2)(x-1)}{x-3}$ تقریباً اشتباه است!



ب) $\frac{(x-2)(x-1)}{(x-1)(x-3)}$

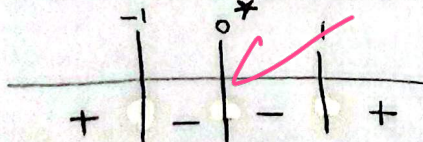


١, ٢, ٥

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

مخرج همواره مثبت است

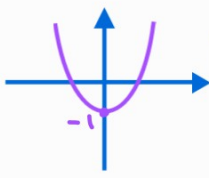


ب) $\frac{x^2+x^2+x+2}{x^2+x+2}$

مخرج همواره مثبت است

+ همواره مثبت است

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خفا افتی صند بار آن را قطع کنی کنی تبوست / $y = x^2 - 1$  , سمر تعل (الف - ۲)

۲- ج) $y^3 + x^3 = 2x - 1$ $\xrightarrow{\text{تقریبی}}$ $\begin{cases} y_1^3 + x_1^3 = 2x_1 - 1 \\ y_2^3 + x_2^3 = 2x_2 - 1 \end{cases}$ $\xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ $\xrightarrow{\text{تبوست}}$

$-x_1^3 + 2x_1 - 1 = -x_2^3 + 2x_2 - 1$

۲- د) $\sqrt[3]{y} + \sqrt[3]{x} = 2$ $\xrightarrow{\text{تقریبی}}$ $\begin{cases} \sqrt[3]{y_1} + \sqrt[3]{x_1} = 2 \\ \sqrt[3]{y_2} + \sqrt[3]{x_2} = 2 \end{cases}$ $\xrightarrow{x_1 = x_2} 2 - \sqrt[3]{x_1} = 2 - \sqrt[3]{x_2} \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ $\xrightarrow{\text{تبوست}}$

$\sqrt[3]{x_1} = 2 - \sqrt[3]{y_1}$

$\sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ $\xrightarrow{\text{تبوست}}$ $\sqrt[3]{x_2} = 2 - \sqrt[3]{y_2}$

۹- الف) $y = \frac{x^3 - 3x + 2}{x - 3}$ $= \frac{(x-1)(x^2 + x - 2)}{x - 3} = \frac{(x-1)(x+2)(x-1)}{x - 3}$ $\xrightarrow{x=3}$ $\begin{matrix} -2 & * & 3 \\ + & - & - & + \end{matrix}$

مجموعه این صفات بر ۱-۲ نفس پذیر است!