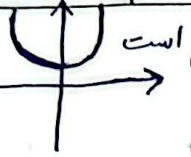


نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: (خبرست)

الف) $y^3 = 2x^2 - 1 \rightarrow \begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع است (۲)

ب) $y^3 + y = 2x^2 - 1 \rightarrow \begin{cases} y_1^3 + y_1 = 2x_1^2 - 1 \\ y_2^3 + y_2 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 + y_1 = y_2^3 + y_2 \rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0$
 $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \Rightarrow \begin{cases} y_1 = y_2 \checkmark \\ y_1^2 + y_1 y_2 + y_2^2 + 1 = 0 \times \end{cases}$
 $y_1 = \frac{-y_2 \pm \sqrt{\Delta}}{2} \quad \Delta = y_2^2 - 4y_2^2 + 4 = -3y_2^2 + 4$
 $y_1 = \frac{-y_2 \pm \sqrt{-3y_2^2 + 4}}{2}$ تابع نیست

الف) $y = x^2 + 1 \rightarrow$  تابع است
 قدرت سیدال $x^2 = 1$ است
 انبساط نویسی

ب) $\sqrt[3]{y} + \sqrt[3]{x} = 2 \rightarrow \begin{cases} \sqrt[3]{y_1} + \sqrt[3]{x_1} = 2 \\ \sqrt[3]{y_2} + \sqrt[3]{x_2} = 2 \end{cases} \xrightarrow{x_1 = x_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ تابع است (۱۵)

الف) $|y| + xy = x + 1 \xrightarrow{x=0} |y| = 1 \rightarrow y = \pm 1 \rightarrow$ تابع نیست

ب) $y^3 + x^3 = 2x - 1 \rightarrow \begin{cases} y_1^3 + x_1^3 = 2x_1 - 1 \\ y_2^3 + x_2^3 = 2x_2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع است (۱۵)

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

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

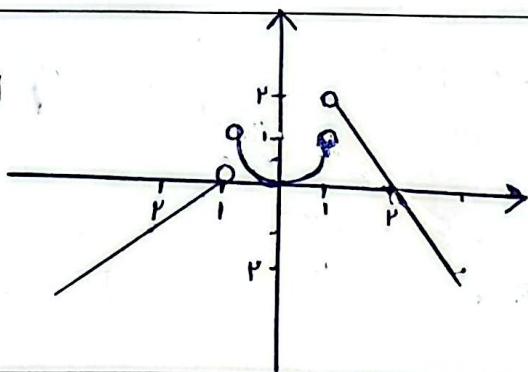
ج) $\tan 330^\circ = \frac{\sin 330^\circ}{\cos 330^\circ} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} \checkmark$

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

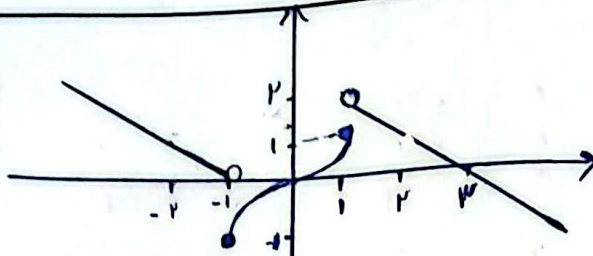
ه) $\sin \alpha = \frac{1}{2} \rightarrow \alpha = 30^\circ, 150^\circ \checkmark$

ب) $\cos \alpha = \frac{\sqrt{3}}{2} \rightarrow \alpha = 30^\circ, 330^\circ \checkmark$

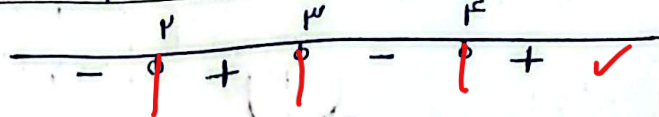
$f(x) = \begin{cases} -2x+1 & x > 1 \\ x^2 & -1 < x < 1 \\ -x-1 & x < -1 \end{cases}$



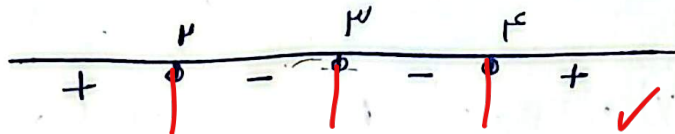
$$f(x) = \begin{cases} -x+3 & x > 1 \\ x^2 & -1 \leq x \leq 1 \\ -x-1 & x < -1 \end{cases}$$



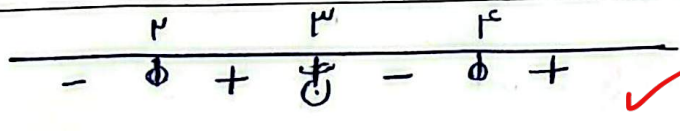
الف) $y = (x-2)(x-3)(x-4)$



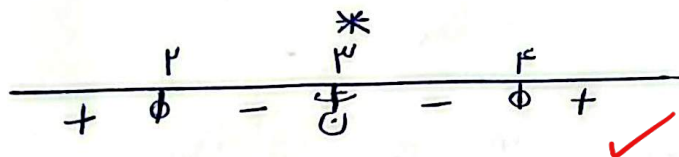
ب) $y = (x-2)(x-3)^2(x-4)$



الف) $y = \frac{(x-2)(x-4)}{x-3}$



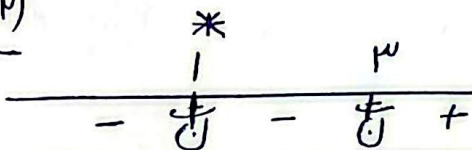
ب) $y = \frac{(x-2)(x-4)}{(x-3)^2}$



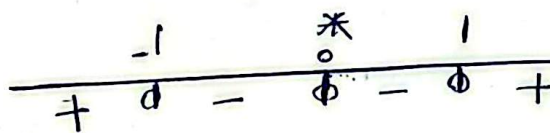
الف) $y = \frac{x^3 - 3x + 2}{x-3} = \frac{(x-1)(x^2 + x - 2)}{x-3}$ داره باینج صغه



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



الف) $\frac{x^3 - x^2}{x^2 + x + 2} = \frac{x^2(x-1)(x+1)}{x^2 + x + 2}$ فاقد ریشه



ب) $\frac{x^3 + 3x + 4}{x^2 + 2x + 2} = \frac{(x+1)(x+2)}{x^2 + 2x + 2}$ فاقد ریشه



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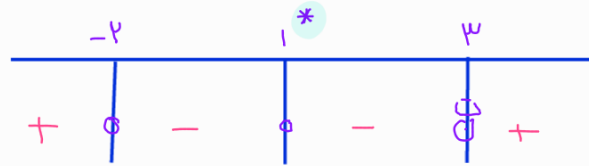
۱۰

الف) $y = \frac{x^3 - 3x + 2}{x - 3}$

$$\rightarrow y = \frac{(x-1)(x^2+x-2)}{(x-3)} = \frac{(x-1)(x-1)(x+2)}{(x-3)}$$

$\xrightarrow{+2}$ $\xrightarrow{+3}$

ریشه ها $\Rightarrow -2$ و 3

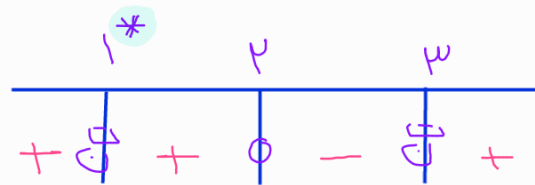


ب) $y = \frac{x^2 - 3x + 2}{x^2 - 4x + 3}$

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

$\xrightarrow{+2}$ $\xrightarrow{+3}$

ریشه ها $\Rightarrow 1$ و 2 و 3



ج) $y = \frac{x^2 + 3x + 4}{x^2 + 2x + 3}$

هواره مثبت $\Rightarrow (3)^2 - 4(1)(4) = -7 < 0$

هواره مثبت $\Rightarrow (2)^2 - 4(1)(3) = -8 < 0$

عبارت هواره مثبت است