

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: ریاضی

الف) $\left. \begin{aligned} y_1^3 &= 2x_1^2 - 1 \\ y_2^3 &= 2x_2^2 - 1 \end{aligned} \right\} \begin{aligned} x_1 &= x_2 \\ y_1 &= y_2 \end{aligned} \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2 \Rightarrow y_1 = y_2 \quad \checkmark$ تابع

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ب) $\left. \begin{aligned} y_1^3 + y_1 &= 2x_1^2 - 1 \\ y_2^3 + y_2 &= 2x_2^2 - 1 \end{aligned} \right\} \begin{aligned} x_1 &= x_2 \\ y_1^3 + y_1 &= y_2^3 + y_2 \end{aligned} \Rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0$

$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2)(y_1 + y_2) = (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \Rightarrow A = 0$
 $\Rightarrow \Delta = y_2^2 - 4(y_1^2 + 1) = -2y_2^2 - 4 < 0 \Rightarrow \Delta < 0 \Rightarrow \text{ریشه ندارد} \Rightarrow A = 0 \Rightarrow y_1 = y_2 \Rightarrow \text{تابع}$

الف) $\left. \begin{aligned} y_1 &= x_1^2 - 1 \\ y_2 &= x_2^2 - 1 \end{aligned} \right\} \begin{aligned} x_1 &= x_2 \\ y_1 &= y_2 \end{aligned} \Rightarrow \text{تابع}$

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

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ج) $\left. \begin{aligned} y_1^2 + y_2^2 &= 2x_1^2 - 1 \\ y_1^2 + y_2^2 &= 2x_2^2 - 1 \end{aligned} \right\} \begin{aligned} x_1 &= x_2 \\ y_1^2 &= y_2^2 \end{aligned} \Rightarrow y_1 = y_2 \Rightarrow \text{تابع}$

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

راهنما؟

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

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ب) $\cot \frac{\pi}{6} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3} \quad \checkmark$

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ج) $\tan 135^\circ = \frac{-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = -1 \quad \checkmark$

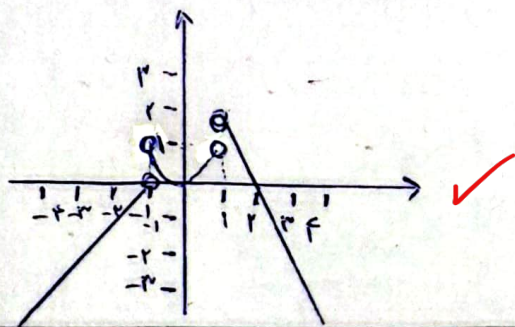
د) $\cot 135^\circ = \frac{1}{-1} = -1 \quad \checkmark$

الف) $\sin \alpha = \frac{1}{3} \Rightarrow \begin{cases} \alpha = \frac{\pi}{6} \\ \alpha = \frac{5\pi}{6} \end{cases} \quad \checkmark$

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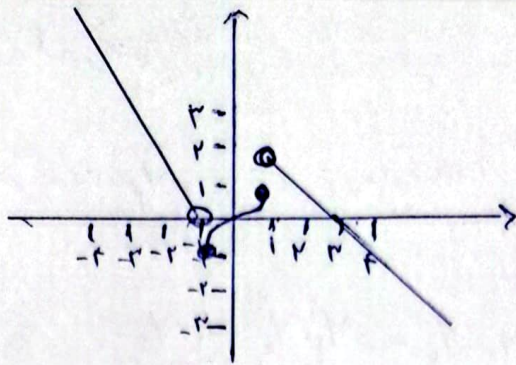
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ب) $\cos \alpha = \frac{\sqrt{2}}{2} \Rightarrow \begin{cases} \alpha = \frac{\pi}{4} \\ \alpha = \frac{7\pi}{4} \end{cases} \quad \checkmark$



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الف) $y = \frac{(x-2)(x-3)(x-4)}{(x-1)(x-2)(x-3)} \Rightarrow \frac{y \quad r \quad f}{- \phi + \phi - \phi +} \quad D_f = \cancel{[2, 3]} \cup [4, +\infty)$

ب) $y = \frac{(x-2)(x-3)(x-4)}{(x-1)(x-2)(x-3)} \Rightarrow \frac{y \quad r \quad f}{+ \phi - \phi - \phi +} \quad D_f = \cancel{(-\infty, 2]} \cup \{3\} \cup [4, +\infty)$

ج) $y = \frac{(x-2)(x-3)(x-4)}{(x-1)(x-2)(x-3)} \Rightarrow \frac{y \quad r \quad f}{- \phi + \phi - \phi +} \quad D_f = \cancel{[2, 3]} \cup [4, +\infty)$

د) $y = \frac{(x-2)(x-3)(x-4)}{(x-1)(x-2)(x-3)} \Rightarrow \frac{y \quad r \quad f}{+ \phi - \phi - \phi +} \quad D_f = \cancel{(-\infty, 2]} \cup [4, +\infty)$

هـ) $y = \frac{x^2 - 3x + 2}{x - 2} = \frac{(x-1)(x-2)}{x-2} \Rightarrow \frac{-r \quad i \quad r}{+ \phi - \phi - \phi +} \quad D_f = \cancel{(-\infty, -1]} \cup [1, 2) \cup (2, +\infty)$

و) $y = \frac{x^2 - 3x + 2}{x^2 - 5x + 6} = \frac{x^2 - 3x + 2}{(x-2)(x-3)} \Rightarrow \frac{x \quad r \quad r}{+ \phi + \phi - \phi +} \quad D_f = \cancel{(-\infty, 1)} \cup (1, 2) \cup (2, +\infty)$

ز) $y = \frac{x^2 - x}{x^2 + x + 2} = \frac{x(x-1)}{(x+2)(x+1)} \Rightarrow \frac{-1 \quad i \quad 1}{+ \phi - \phi - \phi +} \quad D_f = \cancel{(-\infty, -1]} \cup (-1, 0) \cup (0, +\infty)$

ح) $y = \frac{\overbrace{x^2 + 3x + 2}^A}{\underbrace{x^2 + x + 2}_B} \Rightarrow \Delta_A < 0, \Delta_B < 0 \Rightarrow \text{مقلوبت الی} \quad D_f = \mathbb{R}$

پیدا کردن علامت برای پیدا کردن علامت در نواحی مختلف استاده می‌باشد. چرا نویسی داشته باشد

$$\triangleright \sqrt[3]{y} + \sqrt[3]{x} = 2$$

$$\text{تعریف ریاضی} \rightarrow \begin{cases} \sqrt[3]{y_1} + \sqrt[3]{x_1} = 2 \\ \sqrt[3]{y_2} + \sqrt[3]{x_2} = 2 \end{cases} \xrightarrow{x_1 = x_2} \begin{cases} \sqrt[3]{y_1} + \sqrt[3]{x} = 2 \\ \sqrt[3]{y_2} + \sqrt[3]{x} = 2 \end{cases} \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2 \quad \text{تابع است.}$$