

نام و نام خانوادگی سید اکرم پاسخنامه تشریحی تکلیف شماره کلاس *دوره اول*

الف) $x^3 - x = x^2(x-1)$ $\begin{cases} y_1' = 1x^2 + x \\ y_2' = 1x^2 - x \end{cases} \Rightarrow y_1' = y_2' \rightarrow y_1 = y_2 \checkmark$ تابع است

ب) $|x+2| + x^2 = x+2 \xrightarrow{x=0} y = \pm 2 \times$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0 \quad \sqrt{x-4} = 0 \rightarrow x=4 \quad |y-2| = 0 \rightarrow y=2 \checkmark$ تابع است

د) $x = \cos y \xrightarrow{x=0} y = \frac{\pi}{2} \text{ و } \frac{3\pi}{2}, \dots \times$ تابع نیست

الف) $\frac{x+4}{x^2-4x}$ $x(x-4) = 0 \Rightarrow \begin{cases} x=0 \\ x=4 \end{cases} \rightarrow D = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+4}{x^2-4x+4}$ $\Rightarrow D = \mathbb{R}$

ج) $y = \frac{x+4}{x^2+x+4}$ $\Rightarrow D = \mathbb{R}$

د) $y = \frac{x+4}{x^2-4x^2}$ $x^2(x^2-4) = 0 \Rightarrow \begin{cases} x=0 \\ x=\pm 2 \end{cases} \rightarrow D = \mathbb{R} - \{0, \pm 2\}$

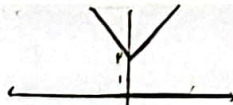
الف) $y = \sqrt{6-x} + \sqrt{x-2}$ $\begin{cases} 6-x \geq 0 \Rightarrow x \leq 6 \\ x-2 \geq 0 \Rightarrow x \geq 2 \end{cases} \xrightarrow{\cap} D = [2, 6]$

ب) $y = \frac{x+1}{x^2+1}$ $\Rightarrow D = \mathbb{R}$

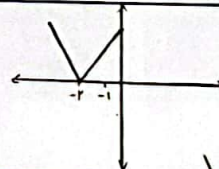
ج) $y = \frac{\sqrt{x-2}}{x-4}$ $\begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ x-4 \neq 0 \rightarrow x \neq 4 \end{cases} \xrightarrow{\cap} D = x \geq 2 \quad \neq \quad [2, +\infty) - \{4\}$

د) $y = \frac{x^2+4}{|x|+x^2}$ $|x|+x^2 = 0 \rightarrow x=0 \Rightarrow D = \mathbb{R} - \{0\}$

الف) $y = |x|+2$

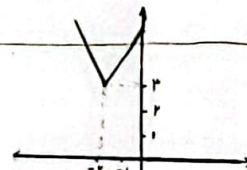


ج) $y = |x+2|$

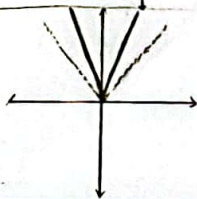


نمودار تابع $|x|+2$

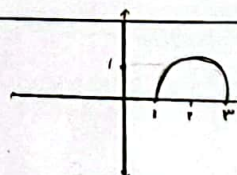
د) $y = |x+2|+3$



ب) $y = 2/|x|$

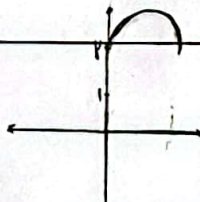


ج) $f(x-1)$

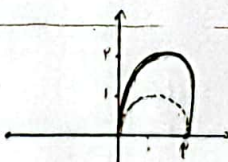


نمودار $f(x)$

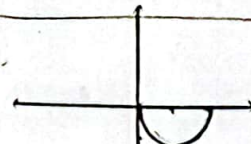
الف) $f(x)+2$



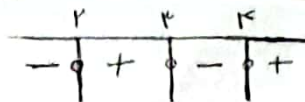
ب) $2f(x)$



ج) $-f(x)$



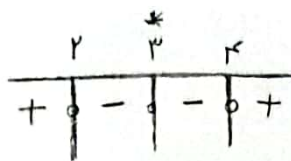
الف) $(x-2)(x-3)(x-4)$



$D = (-\infty, 2] \cup [2, 3] \cup [3, 4] \cup [4, +\infty)$

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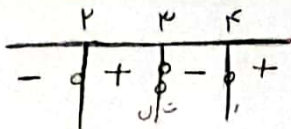
ب) $y = (x-2)(x-3)^2(x-4)$



$D = \{0\} \cup (-\infty, 2] \cup [3, +\infty)$

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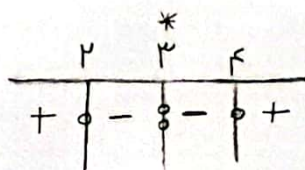
الف) $\frac{(x-2)(x-4)}{x-3}$



$D = (-\infty, 2] \cup [2, 3] \cup [3, +\infty)$

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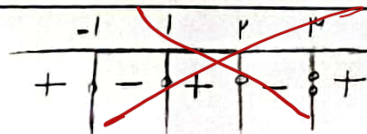
ب) $\frac{(x-2)(x-4)}{(x-3)^2}$



$D = (-\infty, 2] \cup [3, +\infty)$

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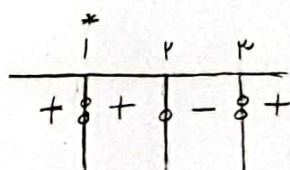
الف) $\frac{x^3 - 3x^2 + 2x}{x-3} \rightarrow (x-2)(x^2-1)$



$D = (-\infty, -1] \cup [1, 2] \cup [3, +\infty)$

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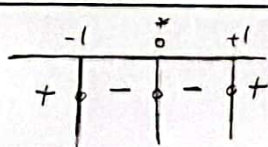
ب) $\frac{x^3 - 3x^2 + 2x}{x^2 - 4x + 3} \rightarrow \frac{(x-2)(x-1)}{(x-3)(x-1)}$



$D = (-\infty, 1) \cup (1, 2] \cup (3, +\infty)$

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الف) $\frac{x^3 - x^2}{x^2 + x + 2} \rightarrow \frac{x^2(x-1)}{x^2 + x + 2}$ $\begin{cases} x=0 \\ x=\pm 1 \end{cases}$



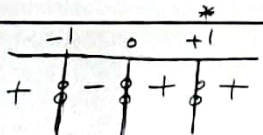
$D = (-\infty, -1] \cup \{0\} \cup [1, +\infty)$

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ب) $y = \frac{x^3 + 3x^2 + 2x}{x^2 + 2x + 1} \rightarrow$ صفر = 0 وخرج = 1/2 و 1/3 $D = \mathbb{R}$

الف) $y = \sqrt{\frac{x^2-1}{x^2-x}}$

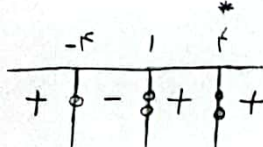
$\frac{x^2-1}{x^2-x} \geq 0$



$D = \mathbb{R} - (-1, 0]$

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ب) $y = \sqrt{\frac{x^2-16}{x^2-4x+4}} \rightarrow \frac{(x-4)(x+4)}{(x-4)(x-1)}$



$D = \mathbb{R} - (-4, 1]$

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