

نام و نام خانوادگی زهرا یزدانی پاسخنامه تشریحی تکلیف شماره کلاس پایه دهم ریاضت

الف $y = x^3 - 3x^2 + 3x - 1 + 1 = (x-1)^3 + 1 \rightarrow y-1 = (x-1)^3 \rightarrow \sqrt[3]{y-1} + 1 = x$ $\hookrightarrow y = \mathbb{R}$ ب $y = \frac{1}{x^2 - 2x} \rightarrow yx^2 - 2yx - 1 = 0 \rightarrow \Delta \geq 0 \rightarrow 4y^2 + 4 \geq 0$ $y = (-\infty, -1] \cup [0, +\infty)$	۱
الف $x^2 - 4x + 10 \rightarrow \min = -\frac{b}{2a} = 2 \rightarrow \text{if } x = 2 \rightarrow y = 6 \rightarrow y = [6, +\infty)$ ب $y = -x^2 + 4x + 3 \rightarrow \max = -\frac{b}{2a} = 3 \rightarrow \text{if } x = 3 \rightarrow y = 12 \rightarrow y = (-\infty, 12]$ ج $y = \sqrt{x^2 - 4x - 3} \rightarrow \min = -\frac{b}{2a} = 2 \rightarrow \text{if } x = 2 \rightarrow y = -5 \rightarrow y = [0, +\infty)$ د $y = \sqrt{4x - x^2} \rightarrow \max = -\frac{b}{2a} = 3 \rightarrow \text{if } x = 3 \rightarrow y = 9 \rightarrow y = [0, 3]$	۲
الف $y = x^3 - 5x^2 + 2x + 1 \rightarrow y = \mathbb{R}$ ب $y = x^4 - 4x^3 + 3x^2 + 2 \rightarrow y = \mathbb{R}$ ج $y = \sqrt{x^4 - 4x^3 + 5x^2 + 1} = \sqrt{1\mathbb{R}} = y = [0, +\infty)$ د $y = (x^4 - 4x^3 + 3x^2 + 1)^2 = (1\mathbb{R})^2 = y = [0, +\infty)$	۳
الف $y = \frac{3x+1}{x-2} \rightarrow y = \mathbb{R} - \{\frac{a}{c}\} = y = \mathbb{R} - \{3\}$ ب $y = \frac{2x+1}{x+1} \rightarrow y = \mathbb{R} - \{2\}$	۴
الف $y = \sqrt{\frac{2x+5}{x+1}} \rightarrow y = \sqrt{\mathbb{R} - \{2\}} \rightarrow y = [0, +\infty) - \{\sqrt{2}\}$ ب $y = \sqrt{\frac{2x+1}{2-x}} \rightarrow y = \sqrt{\mathbb{R} - \{2\}} \rightarrow y = [0, +\infty)$	۵

الف، $y = \frac{1}{x+1} - 3$	ب، $y = \frac{2x-1}{x+2}$	۶
الف، $y = \sin x + \frac{1}{\sin x} \rightarrow y = (-\infty, -2] \cup [2, +\infty)$ ب، $y = \frac{x^4+1}{x^2} = x^2 + \frac{1}{x^2} \rightarrow y = (-\infty, -2] \cup [2, +\infty)$ ج، $y = \frac{\sqrt{x^2+1}}{\sqrt{x}} = \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow y = (-\infty, -2] \cup [2, +\infty)$ د، $y = \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow y = [2, +\infty)$	(5)	۷
الف، $y = x^2 + \frac{1}{x^2+2} + 3 - 3 = [\frac{1}{2}, +\infty) - 3 = [\frac{1}{2}, +\infty) = y$ if $x \rightarrow 0 \rightarrow 3 + \frac{1}{2} = \frac{7}{2}$ $[\frac{1}{2}, +\infty)$ ب، $\frac{x^2+2+1}{\sqrt{x^2+2}} = \sqrt{x^2+2} + \frac{1}{\sqrt{x^2+2}} \quad 2 + \frac{1}{2} = \frac{5}{2} \rightarrow y = [\frac{5}{2}, +\infty)$	(5)	۸
$y = x-2 + 3x+5 = \begin{cases} -x-7 & x < -5 \\ -x-1 & -5 < x < 2 \\ 4x+1 & x > 2 \end{cases}$ Graph of the piecewise linear function. It has a minimum at (-5, -6).	(5)	۹
ب، $y = x-2 - x+1 = \begin{cases} -x+3 & x < -1 \\ -2 & -1 < x < 2 \\ x-1 & x > 2 \end{cases}$ Graph of the piecewise linear function. It has a minimum at (-1, -2). $y = [-2, +\infty)$	الف، $y = x-2 + 2x+2 = \begin{cases} -x & x < -2 \\ -x+2 & -2 < x < 2 \\ 3x & x > 2 \end{cases}$ Graph of the piecewise linear function. It has a minimum at (-2, 2). $y = [2, +\infty)$ بهتر است نمودار هم رسم شود	۱۰

