

نام و نام خانوادگی ..... ایمی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس ..... ازده سپهر B

$$y = 2^3 - 3 \cdot 2^2 + 3 \cdot 2 + 1 - 1 = y = (x-1)^3 + 1 \Rightarrow R = \mathbb{R}$$

$$y = \frac{1}{x^2 - 2x} = x y = \frac{1}{x^2 - 2x} \Rightarrow x = \frac{1}{y(x^2 - 2x)}$$

$$\Rightarrow y = \mathbb{R} - \{0\} \Rightarrow R = \mathbb{R} - \{0\}$$

$$الف) \frac{-\Delta}{4a} = -\frac{2^2}{4} = -1 \quad a=1 \Rightarrow a > 0 \Rightarrow \min. \Rightarrow R = [4 + \infty)$$

$$ب) \frac{-\Delta}{4a} = -\frac{4^2}{-4} = 4 \quad a=-1 \Rightarrow a < 0 \Rightarrow \max \quad y_{\min}=2 \quad y_{\max}=12 \Rightarrow R = (-\infty, 12]$$

$$ج) \frac{-\Delta}{4a} = -\frac{2^2}{4} = -1 \quad a=1 \Rightarrow a > 0 \Rightarrow \min \quad \sqrt{[-4 + \infty)} = [0 + \infty) \Rightarrow R = [0 + \infty)$$

$$د) \frac{-\Delta}{4a} = -\frac{3^2}{-4} = \frac{9}{4} \quad a=-1 \Rightarrow a < 0 \Rightarrow \max \quad y_{\max}=9 \Rightarrow \sqrt{(-\infty, 9]} = R = [0, 3]$$

$$الف) \rightarrow \sqrt[3]{\mathbb{R}} \Rightarrow \mathbb{R} \quad R = \mathbb{R}$$

$$ب) \rightarrow \sqrt[5]{\mathbb{R}} \Rightarrow \mathbb{R} \quad R = \mathbb{R}$$

$$ج) \sqrt{\mathbb{R}} \Rightarrow R = [0 + \infty)$$

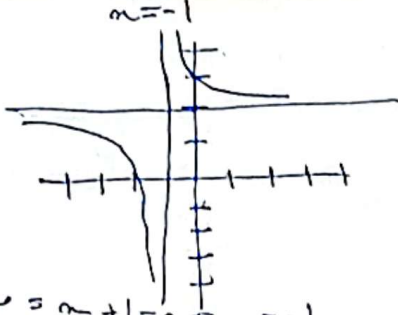
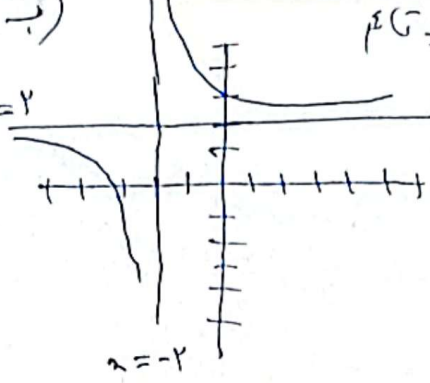
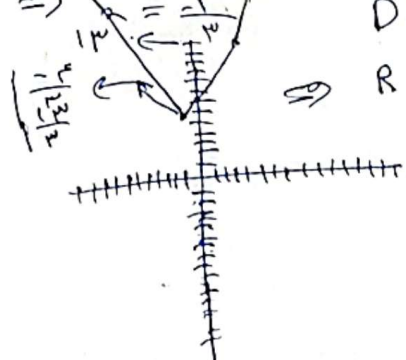
$$د) \sqrt[4]{\mathbb{R}} \Rightarrow R = [0 + \infty)$$

$$الف) R = \mathbb{R} - \left\{\frac{a}{c}\right\} \Rightarrow R = \mathbb{R} - \{3\}$$

$$ب) R = \mathbb{R} - \{2\}$$

$$\sqrt{\mathbb{R} - \{2\}} \Rightarrow R = [0 + \infty) - \{\sqrt{2}\}$$

$$\sqrt{\mathbb{R} - \{-3\}} \Rightarrow R = [0 + \infty)$$

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>الف</p>  <p><math>y=2</math></p> <p><math>x=-1</math></p> <p>مجاورة عمودي = <math>x+1=0 \Rightarrow x=-1</math></p> <p>مجاورة افقي = <math>\frac{a}{c} = 2</math></p>                                                                                                                                                                                                | <p>ب)</p>  <p><math>y=2</math></p> <p><math>x=-2</math></p> <p>مجاورة عمودي = <math>x+2=0 \Rightarrow x=-2</math></p> <p>مجاورة افقي = <math>\frac{a}{c} = 2</math></p> | <p>٦</p>  |
| <p>ا) <math>y = \sin x + \frac{1}{\sin x}</math></p> <p>ب) <math>\frac{x^2+1}{x^3} = x^3 + \frac{1}{x^3} \Rightarrow R = \mathbb{R} - (-\sqrt[3]{2}, \sqrt[3]{2})</math></p> <p>ج) <math>\sqrt[3]{x} + \frac{1}{\sqrt[3]{x}} \Rightarrow \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}} \geq 2 \Rightarrow R = \mathbb{R} - (-\sqrt[3]{2}, \sqrt[3]{2})</math></p> <p>د) <math>\sqrt{x} + \frac{1}{\sqrt{x}} \geq 2 \Rightarrow R = [\sqrt{2}, +\infty)</math></p> | <p><math>\Rightarrow R = \mathbb{R} - (-\sqrt[3]{2}, \sqrt[3]{2})</math></p> <p><math>\frac{x^2+1}{x^3} \geq 2 \Rightarrow x^3 + \frac{1}{x^3} \geq 2</math></p> <p><math>\frac{x^2+1}{x^3} \leq -2 \Rightarrow x^3 + \frac{1}{x^3} \leq -2</math></p>   | <p>٧</p>  |
| <p>ا) <math>\frac{x^2+3}{x^2+3} + \frac{1}{x^2+3} - 3</math></p> <p><math>\Rightarrow \frac{x^2+3}{x^2+3} + \frac{1}{x^2+3} \geq \frac{1}{3} \Rightarrow R = [\frac{1}{3}, +\infty)</math></p> <p>ب) <math>\frac{x^2+3}{\sqrt{x^2+3}} = \sqrt{x^2+3} + \frac{1}{\sqrt{x^2+3}}</math></p> <p><math>\frac{1}{\sqrt{x^2+3}} + \sqrt{x^2+3} \geq 2 \Rightarrow R = [\frac{8}{3}, +\infty)</math></p>                                                        | <p><math>\frac{x^2+3}{x^2+3} + \frac{1}{x^2+3} \geq \frac{1}{3}</math></p> <p><math>\frac{x^2+3}{\sqrt{x^2+3}} + \frac{1}{\sqrt{x^2+3}} \geq 2</math></p>                                                                                                | <p>٨</p>  |
| <p><math>x-3=0 \Rightarrow x=3, \quad x+3=0 \Rightarrow x=-3</math></p> <p><math>y = \begin{cases} x+1 &amp; : x \geq 3 \\ x-3 &amp; : -3 \leq x &lt; 3 \\ -x-1 &amp; : x &lt; -3 \end{cases}</math></p>                                                                                                                                                                                                                                                |  <p><math>D = \mathbb{R}</math></p> <p><math>\Rightarrow R = [\frac{16}{3}, +\infty)</math></p>                                                                      | <p>٩</p>  |
| <p>ا) <math>y = \begin{cases} x-3 &amp; : x \geq 3 \\ x+3 &amp; : -1 \leq x \leq 1 \\ -x-1 &amp; : x \leq -1 \end{cases}</math></p> <p>ب) <math>y = \begin{cases} x-3 &amp; : x \geq 1 \\ -x+1 &amp; : -1 \leq x \leq 1 \\ x-1 &amp; : x \leq -1 \end{cases}</math></p>                                                                                                                                                                                 |  <p><math>\Rightarrow R = [16, +\infty)</math></p> <p><math>\Rightarrow R = [-2, +\infty)</math></p>                                                                 | <p>١٠</p> |