

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره: کلاس: (م. آزاد) تهران

الف) $\frac{|x|-2}{|x|-2} + \frac{2}{|x|-2} = 1 + \frac{2}{|x|-2}$ ~~$R_y = \mathbb{R} - \{1\}$~~

ب) $\frac{|x|^2}{|x|} + \frac{1}{|x|} = |x| + \frac{1}{|x|} \rightarrow R = [2, \infty)$

$y = \frac{x^2 + 2x - 1 + 1}{x+2} = \frac{(x+2)(x-1)}{x+2} + \frac{1}{x+2} = x-1 + \frac{1}{x+2} \rightarrow (x+2) - \frac{1}{x+2} = 0 \Rightarrow x = -2 \pm \sqrt{2}$
 $R = (-\infty, -2] \cup [-2, \infty)$

$f(x) = \frac{x+\frac{1}{x}}{x+1} = 1 - \frac{\frac{1}{x}}{x+1}$ $D_{f(x)} = \mathbb{R}$
 $\tau = x - \alpha$ $\min = -\frac{1}{x} \Rightarrow \tau+1 \geq \frac{1}{x} \Rightarrow \tau \geq -\frac{1}{x}$
 $f(\min) = \frac{1 - \frac{1}{x}}{x+1} = 0$ $f(\max) = \left(1 - \frac{\frac{1}{x}}{x+1}\right) = 1$
 $R = [0, 1)$

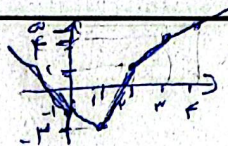
الف) $x_5 = \frac{-5}{-2} = 2.5$ $\forall x_{\max} \in (-\infty, 2.5] \rightarrow R = [0, 2.5]$

ب) $\frac{-b}{2a} = 2$ $\forall x_{\min} \in [-1, \infty) \Rightarrow R = [-2, \infty)$

الف) $\log R = \mathbb{R} = R_y$

ب) $\log \left(x + \frac{1}{x}\right) \rightarrow \log \left(\frac{x^2 + 1}{x}\right) \Rightarrow R_y = [1, \infty)$

الف) $x \begin{array}{c|c|c|c|c} 0 & 1 & 2 & 3 & 4 \\ \hline y & -1 & 1 & 1 & 4 & 0 \end{array}$



$[-2, \infty) \subset \mathbb{R}$

$\Rightarrow$ $R = [-1, \infty)$

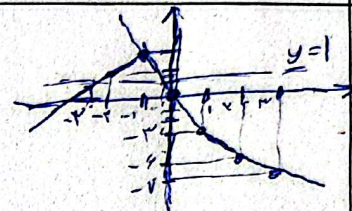
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ب) $x \begin{array}{c|c|c|c|c} -2 & -1 & 0 & 1 & 2 & 3 \\ \hline y & 2 & 3 & 0 & -3 & -2 & -5 \end{array}$

$R = (-\infty, \frac{1}{3})$

$(-\infty, -3) \cup [-\frac{1}{3}, +\infty)$

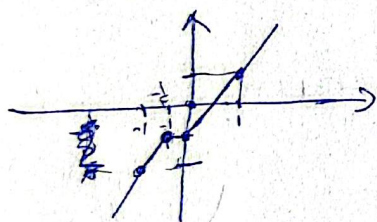
$x = \begin{cases} -\frac{1}{3} \\ -3 \end{cases}$



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$x \begin{array}{c|c|c|c} -1 & -\frac{1}{2} & 0 & 1 \\ \hline y & -2 & -4 & -1 & 1 \end{array}$

$\mathbb{R}$



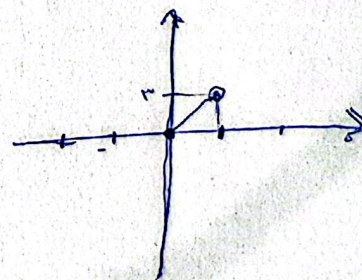
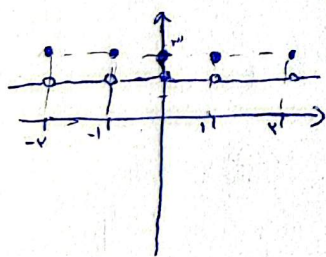
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الف) $[2] + [3] + 3$

$R = \{2, 3\}$

$\Rightarrow M_R = [2]$



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الف) $\sin^2 x - \sin x + 1$ $R = [\frac{3}{4}, 3]$

$\Rightarrow (\sin^2 x)^2 + \sin^2 x + 1$ $R = [1, 3]$

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