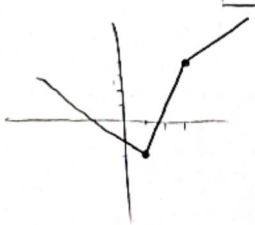
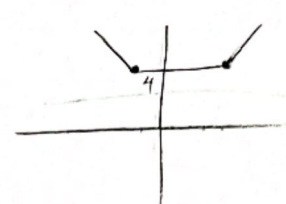
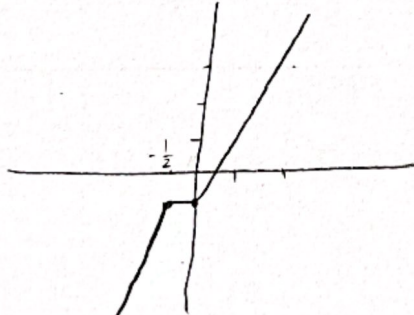
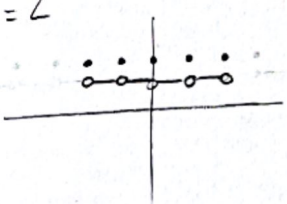
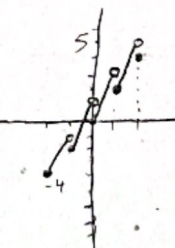


$1 + \frac{3}{ x -2} \rightarrow 0, (x < 2)$ $y \in (-\infty, -\frac{1}{2}]$ $ x > 2 \rightarrow y \in (1, +\infty)$ $\Rightarrow R = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$	<table border="1"> <tr> <th>الف</th> <th>ب</th> </tr> <tr> <td></td> <td> $x > 0 \rightarrow x + \frac{1}{x} \geq 2$ $x < 0 \rightarrow -x - \frac{1}{x} = -(\underbrace{x + \frac{1}{x}}_{(-\infty, -2]}) \geq 2$ $\Rightarrow R = [2, +\infty)$ </td> </tr> </table>	الف	ب		$x > 0 \rightarrow x + \frac{1}{x} \geq 2$ $x < 0 \rightarrow -x - \frac{1}{x} = -(\underbrace{x + \frac{1}{x}}_{(-\infty, -2]}) \geq 2$ $\Rightarrow R = [2, +\infty)$	1
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$yx + 3y = x^2 + 2x - 2$ $\Rightarrow x^2 + (2-y)x - (2+3y) = 0$ $\Delta \geq 0 \rightarrow y^2 - 4y + 4 + 8 + 12y \geq 0$ $y^2 + 8y + 12 \geq 0$ $\frac{y}{+} \frac{-6}{+} \frac{-2}{-}$ $\Rightarrow R = \mathbb{R} - (-6, -2)$		2				
$x^2 - x + 1 \neq 0$ $\Delta = -3 < 0 \Rightarrow \text{مضروب مثبت} \Rightarrow D_f = \mathbb{R}$ $x^2 - x = t \rightarrow \frac{t + \frac{1}{4}}{t+1} \xrightarrow[t = -\frac{1}{4}]{t = +\infty} y = -1$ $t_{\max} = +\infty$ $t_{\min} = -\frac{1}{4}$ $\rightarrow R = [0, -1)$		3				
$x_{\max} = \frac{-4}{-2} = 2$ $y_{\max} = -4 + 8 - 1 = 3$ $\Rightarrow R = [0, \sqrt{3}]$	<table border="1"> <tr> <th>الف</th> <th>ب</th> </tr> <tr> <td></td> <td> $x_{\min} = \frac{8}{4} = 2$ $y_{\min} = 8 - 16 = -8$ $R = [-2, +\infty)$ </td> </tr> </table>	الف	ب		$x_{\min} = \frac{8}{4} = 2$ $y_{\min} = 8 - 16 = -8$ $R = [-2, +\infty)$	4
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$x^3 - x + 18 \in (-\infty, +\infty)$ $x^3 - x + 18 > 0 \text{ قق}$ جواب: نظریه هر عدد مثبت می تواند عدد حقیقی باشد $R = \mathbb{R}$	<table border="1"> <tr> <th>الف</th> <th>ب</th> </tr> <tr> <td></td> <td> $\frac{x^2+1}{x} = x + \frac{1}{x}$ $x > 0 \rightarrow x + \frac{1}{x} \geq 2$ $\Rightarrow R = [1, +\infty)$ </td> </tr> </table>	الف	ب		$\frac{x^2+1}{x} = x + \frac{1}{x}$ $x > 0 \rightarrow x + \frac{1}{x} \geq 2$ $\Rightarrow R = [1, +\infty)$	5
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$x=1 \rightarrow y=-2$ $x=3 \rightarrow y=4$ $x > 3 \rightarrow y=x+1$ $x < 1 \rightarrow y=-3x-1$ $R = [-2, +\infty)$ 	$x=3 \Rightarrow y=4$ $x=-1 \Rightarrow y=4$ $R = [4, +\infty)$ ملفاني: 	6
$x > 2 \rightarrow x-2-2x-2 < 1 \rightarrow -x-5 < 0 \Rightarrow x > -5$ $2 > x > -1 \rightarrow 2-x-2x-2 < 1 \rightarrow -3x-1 < 0 \Rightarrow x > -\frac{1}{3}$ $x < -1 \rightarrow 2-x+2x+2 < 1 \rightarrow x+3 < 0 \Rightarrow x < -3$ $D = (-\infty, -3] \cup [-\frac{1}{3}, +\infty)$		7
$x > 0 \rightarrow y=3x-2x-1+x=2x-1$ $0 > x > -\frac{1}{2} \rightarrow y=-1$ $-\frac{1}{2} > x \rightarrow y=3x+2x+1-x=4x+1$ $\Rightarrow R = \mathbb{R}$		8
$y = [x] + [-x] + 3$ $x \in \mathbb{Z} \Rightarrow y=3 \Rightarrow R = \{2, 3\}$ $x \notin \mathbb{Z} \Rightarrow y=2$ 	$x \in [-2, -1) \Rightarrow y=3x+2$ $x \in [-1, 0) \Rightarrow y=3x+1$ $x \in [0, 1) \Rightarrow y=3x$ $x \in [1, 2) \Rightarrow y=3x-1$ $x=2 \Rightarrow y=3x-2=4$ $R = [-4, 5) \mid R \stackrel{D_f}{=} \mathbb{R}$ 	9
$\sin x = -1 \Rightarrow y=3$ $\sin x = 1 \Rightarrow y=1$ $(\sin x)_{\min} = \frac{b}{2a} = \frac{1}{2} \Rightarrow y = \frac{3}{4}$ $R = [\frac{3}{4}, 3]$	$\sin^2 x = t \Rightarrow y = t^2 + t + 1$ $0 \leq \sin^2 x \leq 1 \Rightarrow 0 \leq t \leq 1$ $t=0 \rightarrow y=1$ $t=1 \rightarrow y=3 \Rightarrow R = [1, 3]$ $t_{\min} = \frac{b}{2a} = -\frac{1}{2} \times$	10