

کلیف

دوازدهم فصل A

نام = فالحه شجری

الف) $|x| - 2y = |x| + 1 \Rightarrow |x|(y-1) = 1+2y \Rightarrow |x| = \frac{1+2y}{y-1} \Rightarrow$

$\frac{1+2y}{y-1} \geq 0 \Rightarrow \frac{-\frac{1}{2}}{+1-\frac{1}{2}} \Rightarrow R_f = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$

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ب) $y = \frac{x^2+1}{x} \Rightarrow x > 0 \Rightarrow x + \frac{1}{x} \Rightarrow R_f = [2, +\infty)$
 $y = \frac{x^2+1}{-x} \Rightarrow x < 0 \Rightarrow -x - \frac{1}{x} \Rightarrow R_f = (-\infty, -2]$

$yx + 2y = x^2 + 2x - 3 \Rightarrow x^2 + (2-y)x - 2-3y = 0$

$\Rightarrow \Delta = (2-y)^2 - 4(-2-3y) = 4 + y^2 - 4y + 8 + 12y = y^2 + 8y + 12 \geq 0$

$y^2 + 8y + 12 \geq 0 \Rightarrow (y+2)(y+6) \geq 0 \Rightarrow \frac{-6}{+1} \frac{-2}{-1} \Rightarrow R_f = (-\infty, -6] \cup [-2, +\infty)$

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$\frac{(x-\frac{1}{2})^2}{x^2-x+1} \Rightarrow R_f = \mathbb{R}$

$\frac{(x-\frac{1}{2})^2}{x^2-x+1} = y \Rightarrow yx^2 + \frac{5}{2}y = x \Rightarrow yx^2 - x + \frac{5}{2}y = 0 \Rightarrow \Delta = 1 - 5y \geq 0 \Rightarrow y \leq \frac{1}{5}$
 $\Rightarrow \frac{1}{5} \geq y \geq \frac{1}{5}$

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الف) $\max_{x \in \mathbb{R}} \frac{x^2}{x^2+1} \Rightarrow \max_{x \in \mathbb{R}} \frac{x^2}{x^2+1} = \frac{1}{2} \Rightarrow R_f = [0, \frac{1}{2}]$

ب) $\min_{x \in \mathbb{R}} \frac{x^2}{x^2+1} \Rightarrow \min_{x \in \mathbb{R}} \frac{x^2}{x^2+1} = 0 \Rightarrow R_f = [0, +\infty)$

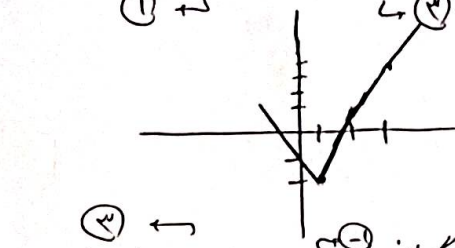
4

$\frac{x^2}{x^2+1} \Rightarrow R_f = \mathbb{R} \Rightarrow R_f = \mathbb{R} \subseteq (-\infty, +\infty)$

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ب) اول دانه $\frac{x^2+1}{x} > 0 \Rightarrow x > 0 \Rightarrow R_f = [1, +\infty)$

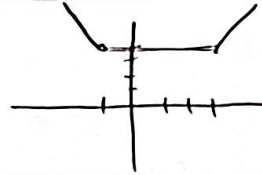
الف) $|2n-2| - |n-3|$ $\frac{1}{-n-1} \quad \frac{3}{n+1}$



$R_f = [-1, +\infty)$

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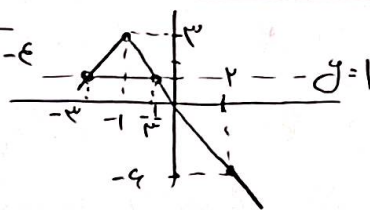
ب) $|n-2| + |n+1|$ بداية من 1



$[1, +\infty) = R_f$

$|n-2| - |2n+2| \leq 1$

$\frac{-1}{n+2} \quad \frac{2}{n+2} \quad -n-2$

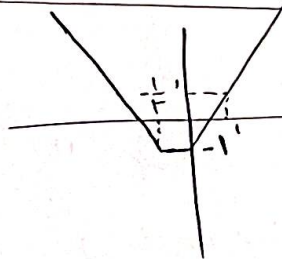


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$(-\infty, -3] \cup (-\frac{1}{2}, +\infty)$ بداية من 1

$2n - |2n+1| + |n|$

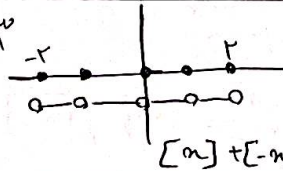
$\frac{-1}{2n+1} \quad \frac{0}{n-1}$



$R_f = [-1, +\infty)$

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الف) $[n] + [-n] + 3$

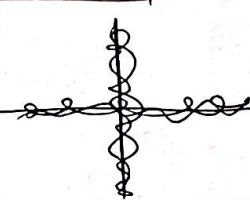


$R_f = \{3, 2\}$

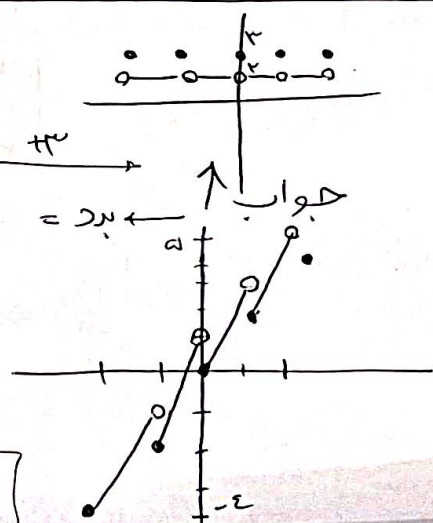
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ب) $2n - [n]$

$\begin{cases} -2 \leq n < -1 \rightarrow 2n+2 \\ -1 \leq n < 0 \rightarrow 2n+1 \\ 0 \leq n < 1 \rightarrow 2n \\ 1 \leq n < 2 \rightarrow 2n-1 \\ n=2 \rightarrow 2 \end{cases}$



$R_f = [-2, 2)$



الف) $\sin^2 n - \sin^2 n+1$ $\sin n = 1$

$\sin n = -1$

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$R_f = [\frac{3}{4}, 1]$

$\sin n = \frac{-6}{12} = \frac{1}{2}$

ب) $\sin^2 n + \sin^2 n+1$ $\sin^2 n = 1$

$\sin^2 n \neq \frac{1}{2}$ بداية من 1 $\Rightarrow R_f = [1, 2]$