

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

$\frac{-\frac{1}{2}}{+} \frac{1}{-} \frac{1}{+} \rightarrow R = \mathbb{R} - (-\frac{1}{2}, 1]$

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

الف، $y = \frac{x^2+2x-2}{x+3} \rightarrow xy+3y = x^2+2x-2 \rightarrow x^2+(2-y)x-2-3y$

$\Delta > 0 \rightarrow y^2+4-4y+4+12y > 0 \rightarrow y^2+8y+8 > 0 \rightarrow (y+4)(y+2) > 0 \rightarrow R = \mathbb{R} - (-4, -2)$

الف، $y = \frac{x^2-x+\frac{1}{x}}{x^2-x+1} \rightarrow D = \mathbb{R}$ $x^2-x+\frac{1}{x} = yx^2-yx+y = x^2(1-y) + (y-1)x + \frac{1}{x} - y = 0$

$\rightarrow \Delta > 0 \rightarrow (y-1)^2 - 4(1-y)(\frac{1}{x}-y) > 0 \rightarrow y^2+1-2y-4y+4y^2+4y-1 > 0 \rightarrow -3y^2+3y = 0$

$3y^2-3y=0 \rightarrow 3y(y-1) \rightarrow R = \mathbb{R} - (0, 1)$

الف، $y = \sqrt{-x^2+2x-1}$ $\rightarrow \frac{-b}{2a} = 1 \rightarrow x=1 \rightarrow y = \sqrt{1} \rightarrow R = [0, \sqrt{1}]$

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ب، $y = \sqrt{2x^2-2x} \rightarrow \frac{-b}{2a} = \frac{1}{2} \rightarrow x = \frac{1}{2} \rightarrow y = \sqrt{-\frac{1}{2}} \rightarrow R = [-\frac{1}{2}, +\infty)$

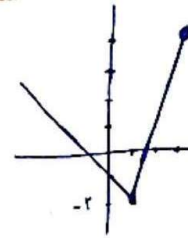
الف، $y = \log(x^2-x+1)$ $\rightarrow R = \mathbb{R}$

ب، $y = \log_r(\frac{x^2+1}{x}) \rightarrow \frac{x^2+1}{x} = (-\infty, -1] \cup [1, +\infty) \rightarrow R = [1, +\infty)$

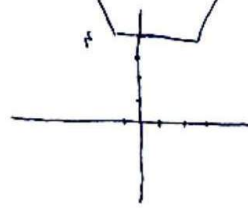
عق

٧ الف، $y = |r_n - r| - |n - r| \rightarrow$

$R = [-r, +\infty)$

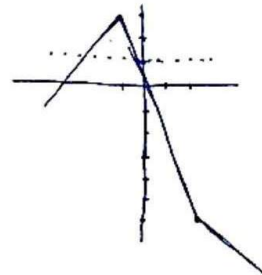


ب، $y = |n - r| + |n + 1|$



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

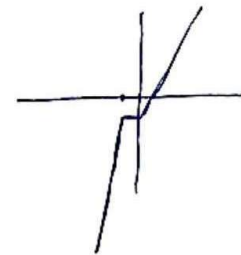
٨ $|n - r| - |r_n + r| \leq 1 \rightarrow$



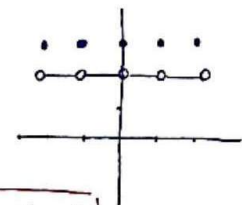
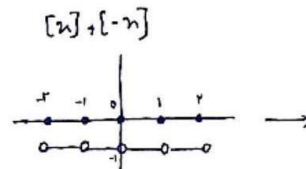
$\left. \begin{array}{l} -r_n = 1 \rightarrow n = -\frac{1}{r} \\ n + 1 = 1 \rightarrow n = -1 \end{array} \right\} R = [R - (-1, -\frac{1}{r})]$

٩ $y = r_n - |r_n + 1| + |n| \rightarrow$

$R = \mathbb{R}$

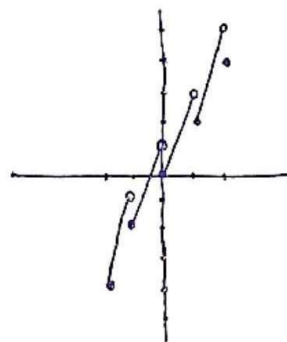


٩ الف $y = [n] + [r - n] \rightarrow r + [n] + [-n]$



$R = \{r, r\}$

ب، $y = r_n - [n]$



$R = [-1, \infty)$

١٠ الف $y = \sin^n n - \sin n + 1 \left\{ \begin{array}{l} \sin = 1 \rightarrow y = 1 \\ \sin = -1 \rightarrow y = r \\ \sin = -\frac{b-1}{ra} \rightarrow y = \frac{r}{r} \end{array} \right. R = [\frac{r}{r}, r]$

ب، $y = \sin^n n + \sin^n n + 1 \left\{ \begin{array}{l} \sin = 1 \rightarrow y = r \\ \sin = 0 \rightarrow y = 1 \\ \sin = -\frac{b-1}{ra} \rightarrow \text{غير محدد} \end{array} \right. R = [1, r]$