

الف) $y = \frac{ n +1}{ n -2} \rightarrow y n - 2y = n +1$ $y n - n = 2y+1 \rightarrow n (y-1) = 2y+1$ $n = \frac{2y+1}{y-1} \rightarrow \frac{-\frac{1}{2} - 1}{+\frac{1}{2} - \frac{1}{2} +}$ $R_f: (-\infty, -\frac{1}{2}] \cup (1, +\infty)$	ب) $\frac{n^2}{ n } + \frac{1}{ n } = n + \frac{1}{ n } \rightarrow$ $R_f: [2, +\infty)$	1
$y = \frac{n^2+2n-2}{n+3} \rightarrow ny + 3y = n^2+2n-2 \rightarrow n^2+n(2-y)-2-3y=0$ $n = \frac{-(2-y) \pm \sqrt{(2-y)^2 - 4(1)(-2-3y)}}{2} \rightarrow \Delta \geq 0 \rightarrow y^2 - 4y + 4 + 1 + 12y \geq 0 \rightarrow$ $y^2 + 8y + 5 \geq 0 \rightarrow (y+2)(y+1) \geq 0 \rightarrow \frac{-2 - y}{+\frac{1}{2} - \frac{1}{2} +}$ $R_f: (-\infty, -2] \cup [-1, +\infty)$	2	
$f(n) = \frac{n^2-n+1}{n^2-n+1} \rightarrow n^2-n+1 \neq 0 \rightarrow 1 - 4(1) < 0 \rightarrow n^2-n+1 > 0$ $D_f: \mathbb{R}$ $\frac{n^2-n+1 - \frac{2}{n}}{n^2-n+1} = 1 - \frac{\frac{2}{n}}{n^2-n+1} = 1 - \frac{2}{f(n^2-n+1)} \rightarrow R_f: [0, 1)$ $n = \frac{1}{f} + y = 0$	3	
الف) $y = \sqrt{-n^2+4n-1}$ $\left \frac{-b}{2a} = \frac{-4}{-2} = 2 \right$ $R_f: \sqrt{(-\infty, 2]} \Rightarrow R_f: [0, \sqrt{3}]$	ب) $y = \sqrt{2n^2-11n}$ $\left \frac{-b}{2a} = \frac{+11}{4} = 2 \right$ $R_f: \sqrt{(-1, +\infty)} \rightarrow R_f: [-2, +\infty)$	4
الف) $y = \log(n^2-n+11)$ $R_f: (-\infty, +\infty)$	ب) $y = \log \sqrt{\frac{n^2+1}{2}}$ $R_f: [2, +\infty)$ $R_f: [1, +\infty)$	5

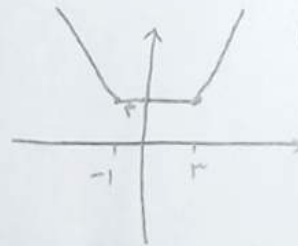
الف) $y = |2m-2| - |m-2|$

$$\begin{vmatrix} 0 & 1 & 2 & 2 \\ -1 & -2 & 2 & 2 \end{vmatrix}$$



$R_f: [-2, +\infty)$

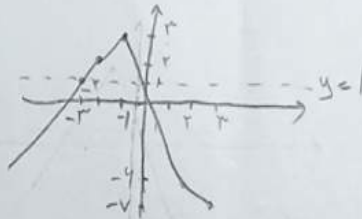
$y = |m-2| + |m+1|$



$R_f: [2, +\infty)$

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

$$\begin{vmatrix} -2 & -1 & 2 & 2 \\ 2 & 2 & -2 & -2 \end{vmatrix}$$

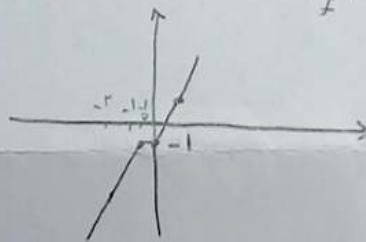


$(-\infty, -2] \cup [-\frac{1}{2}, +\infty)$

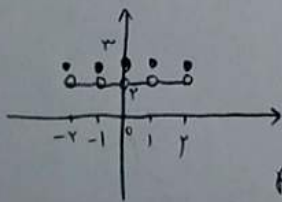
$y = 2m - |2m+1| + |m|$

$$\begin{vmatrix} -2 & -1 & 0 & 1 \\ -2 & -1 & -1 & 1 \end{vmatrix}$$

$R_f: (-\infty, +\infty)$

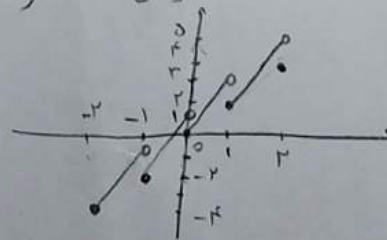


الف) $[x] + [2-x] \rightarrow [x] + [-x] + 2$



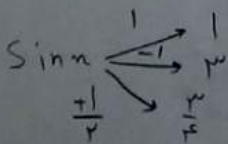
$R_f: \{2, 3\}$

ب) $2m - [m]$



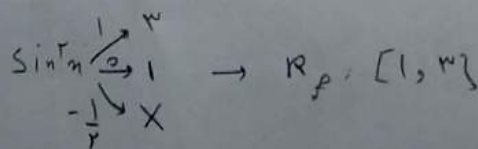
$R_f: [-2, 2)$

الف) $y = \sin^2 m - \sin m + 1$



$R_f: [\frac{3}{4}, 3]$

ب) $y = \sin^2 m + \sin^2 m + 1$



$R_f: [2, 3]$