

۲۰ آفرین

دارم رستم A

تلف

رژمان در الم

الف) $y = \frac{m+1}{m-2}$

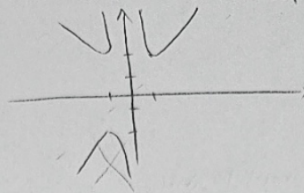
$m+1 - y = m+1$

$m(y-1) = y+1$

$m = \frac{y+1}{y-1}$

$R_f = (-\infty, -\frac{1}{2}) \cup (1, +\infty)$

ب) $y = \frac{m^2+1}{m} = m + \frac{1}{m}$



$R_f = [2, +\infty)$

$y = \frac{n^2+n-2}{n+3}$

$n^2+n-2 = ny+2y$

$n^2+n(1-y) - 2-2y = 0$

$n = \frac{y-2 \pm \sqrt{4+y^2-4y+4+4y}}{2}$

$R_f = (-\infty, -2] \cup [2, +\infty)$

$y^2+ny+1 = (y+2)(y+4)$

$\begin{matrix} -4 & -2 \\ + & - & + \end{matrix}$

$f(x) = \frac{n^2-n+\frac{1}{2}}{n^2-n+1+\frac{1}{2}}$

$n^2-n+1+\frac{1}{2} = 0 \rightarrow D_f = \{ \}$

$1 - \frac{1}{2} = \frac{1}{2}$

$yn^2 - yn + y = n^2 - n + \frac{1}{2} \rightarrow n^2(1-y) + n(-1+y) + \frac{1}{2} - y = 0$

$\begin{matrix} -1 \\ - & + & - \end{matrix}$

$\Delta = (y-1)^2 - 4(-1+y)(\frac{1}{2}-y) = y^2 - 2y + 1 - 2(-1+y)(\frac{1}{2}-y) = y^2 - 2y + 1 - 2(-\frac{1}{2} + y + \frac{1}{2}y - y^2) = y^2 - 2y + 1 - (-1 + y + \frac{1}{2}y - y^2) = y^2 - 2y + 1 + 1 - y - \frac{1}{2}y + y^2 = 2y^2 - \frac{5}{2}y + 2$

$n = \frac{1-y \pm \sqrt{2y^2 - \frac{5}{2}y + 2}}{2(1-y)}$

$R_f = [0, 4]$

الف) $y = \sqrt{-n^2+2n-1}$

$n_{max} = \frac{-2}{-2} = 1$

$y_{max} = -1+2-1=0$

$R_f = [0, 3]$

ب) $y = \sqrt{2n^2-4n}$

$n_{min} = \frac{4}{2} = 2$

$y_{min} = 2-4 = -2$

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

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

الف) $y = \frac{n^2-n+1}{n^2-n+1} \rightarrow R_f = \mathbb{R}$

ب) $y = \frac{n^2+1}{n} \rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

$y^2 = 1$

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

در اینجا فقط n ها را می بینیم که از $(-\infty, +\infty)$ باشند و در هر دو طرف $\sqrt{}$ برداشته می شود و به دست می آید $R_f = \mathbb{R}$

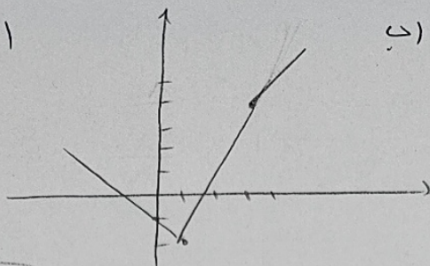
نقطه این سمت را می بینیم

الف) $|x-2| - |x-3|$

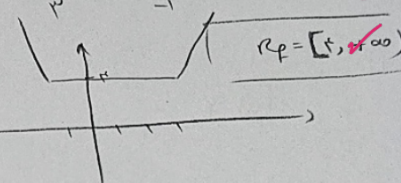
$-x+2$	$x-2$	$x-2$
$+x-2$	$+x-2$	$-x+3$
$-x-1$	$x-2$	$x+1$

(-2) (2)

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



ب) $y = |x-2| + |x+1|$



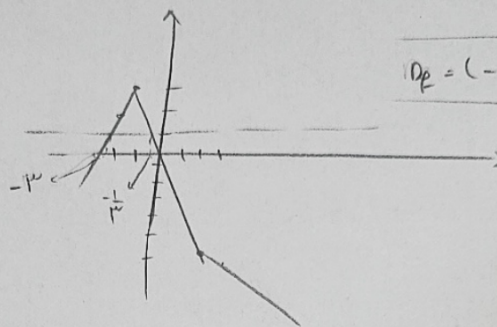
$R_f = [-1, +\infty)$

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

$-x+2$	$-x+2$	$x-2-x-2$
$x+2$	$-x-2$	$-x-2$
$x+2$	$x-2$	$-x-2$

(-2) (-4)

$-x=1$
 $x=-1$
 $x+2=1 \quad x=-1$



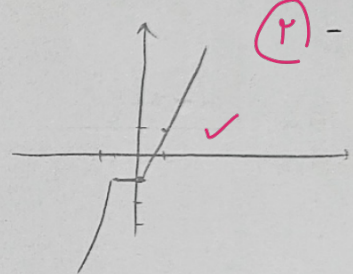
$R_f = (-\infty, -1] \cup [-1, +\infty)$

$y = x - |x+1| + |x|$

$R_f = [0, +\infty)$

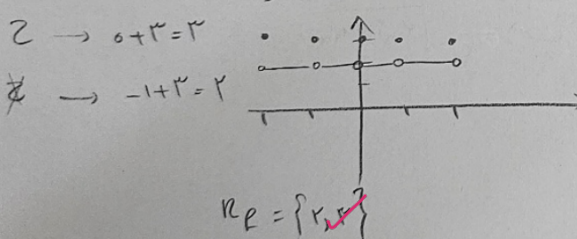
$x+x+1$	$x-x-1$	$x-x-1+x$
$-x$	$-x$	$x-1$
$x+1$	-1	$x-1$

(-1) (-1)

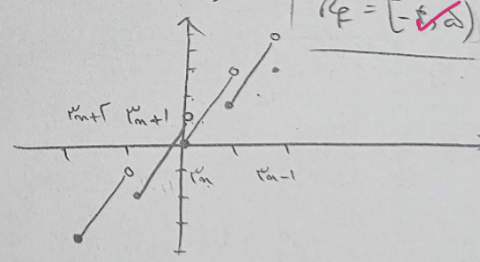


الف) $y = [n] + [x-n]$

$[n] + [-n] + x$



ب) $y = x - [n]$



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

الف) $y = \sin^2 x - \sin x + 1$

$\sin x \begin{cases} \min = -1 \rightarrow 1+1+1=3 \\ \max = 1 \rightarrow 1-1+1=1 \end{cases}$

$R_f = [\frac{1}{2}, 3]$

$-\frac{b}{2a} = \frac{1}{2} \rightarrow \frac{1}{2} + 1 = \frac{3}{2}$

ب) $y = \sin^2 x + \sin x + 1$

$\sin x \begin{cases} \max = 1 \rightarrow 1+1+1=3 \\ \min = 0 \rightarrow 0+0+1=1 \end{cases}$

$R_f = [1, 3]$

$-\frac{b}{2a} = \frac{-1}{2} \rightarrow -\frac{1}{2}$