

Subject:

Year. Month. Date. ()

دریا دانی درستی

الف) $\frac{|x|+1}{|x|-2}$ در صورت $|x| \rightarrow +\infty \rightarrow \frac{\infty}{\infty} = 1$
 در مخرج $|x| \rightarrow -2 \rightarrow \frac{+1}{-2} = -\frac{1}{2}$
 $R_f = (-\infty -\frac{1}{2}] \cup [1 + \infty)$

ب) $\frac{x^2+1}{x^2}$ $|x| \rightarrow +\infty \rightarrow 1 + \frac{1}{|x|} \rightarrow 1$
 $R_f = [1 + \infty)$

ج) $\frac{x^2+2x-2}{x+2}$ $\rightarrow \frac{x^2+2x-2+1}{x+2} = \frac{(x+2)(x-1)+1}{x+2} \rightarrow x-1 + \frac{1}{x+2}$

$x+2 + \frac{1}{x+2} - \varepsilon \rightarrow R_f = (-\infty -2] \cup [-2 + \infty)$

$f(x) = \frac{x^2-x+\frac{1}{2}}{x^2-x+1} = y \rightarrow yx^2-yx+y = x^2-x+\frac{1}{2}$

$x^2(y-1) + x(1-y) + y - \frac{1}{2} = 0$ $R_f = (-\infty 0] \cup [1 + \infty)$

$\Delta \geq 0$ $b^2 - 4ac \rightarrow y^2+1-4y - (\varepsilon(y-1)(y-\frac{1}{2})) \Rightarrow -4y(y-1) \geq 0$

$x^2-x+1 \neq 0 \rightarrow \Delta = 1-4 = -3 < 0 \rightarrow$ no solution $\rightarrow R_f = \mathbb{R}$

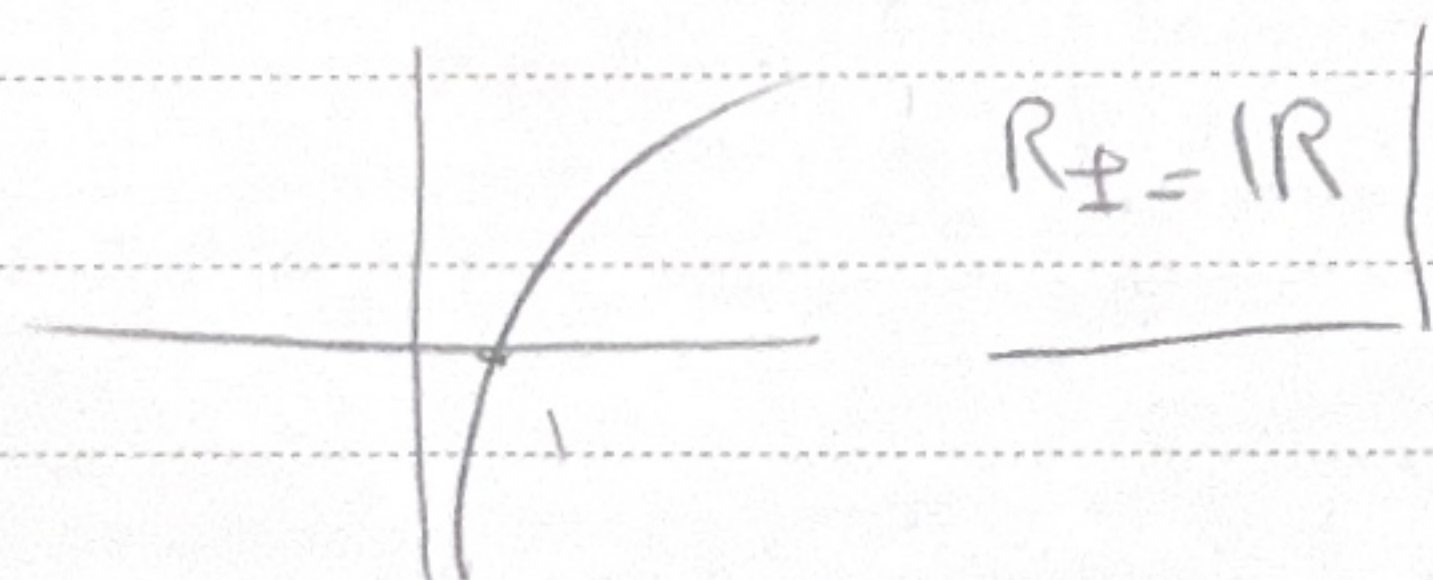
$\frac{1}{x} + \frac{1}{x} = \frac{2}{x}$
 $R_f = [0, 1]$

د) $y = \sqrt{-x^2+2x-1}$
 max $\left| \begin{array}{l} \frac{-b}{2a} = \frac{-2}{-2} = 1 \\ -\varepsilon+1-1 = \varepsilon \end{array} \right| \sqrt{(-\infty \varepsilon)} \rightarrow R_f = [0, \sqrt{\varepsilon}]$

ب) $\sqrt{2x^2-11x}$ $\frac{1}{2a} = \frac{1}{\varepsilon} = 1$ $\rightarrow \sqrt{[-1 + \infty)} \rightarrow [-2 + \infty)$
 $R_f = [-2 + \infty)$

الف) $\log(x^2-x+11) \rightarrow R = \mathbb{R}$

ب) $\log\left(\frac{x^2+1}{x}\right) \rightarrow \frac{x}{x} + \frac{1}{x}$



$x + \frac{1}{x} \rightarrow [1 + \infty)$
 $(-\infty -1] \rightarrow \overline{\text{و ق ع}}$

$\log 1 = 0$

$R_f = [1 + \infty)$

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ا) $y = |x-2| - |x-1|$

$x-2 > x-1$	$x-2 < x-1$	$x-2 = x-1$
$x > 1$	$x < 1$	$x = 1$
$x-2-x+1 = -x-1$	$x-2-x+1 = -x-1$	$x-2-x+1 = -x-1$
$x-2-x+1 = -x-1$	$x-2-x+1 = -x-1$	$x-2-x+1 = -x-1$

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

ب) $y = |x-2| + |x+1|$

$x-2 > x+1$	$x-2 < x+1$	$x-2 = x+1$
$x > -3$	$x < -3$	$x = -3$
$x-2-x-1 = -x-3$	$x-2-x-1 = -x-3$	$x-2-x-1 = -x-3$
$x-2-x-1 = -x-3$	$x-2-x-1 = -x-3$	$x-2-x-1 = -x-3$

$R_F = [-3, +\infty)$

ج) $y = |x-2| + |x+2| + |x|$

$x-2 > x+2$	$x-2 < x+2$	$x-2 = x+2$
$x > 2$	$x < 2$	$x = 2$
$x-2-x-2 = -x-4$	$x-2-x-2 = -x-4$	$x-2-x-2 = -x-4$
$x-2-x-2 = -x-4$	$x-2-x-2 = -x-4$	$x-2-x-2 = -x-4$

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

د) $y = |x+1| + |x|$

$x+1 > x$	$x+1 < x$	$x+1 = x$
$x > -1$	$x < -1$	$x = -1$
$x+1-x = 1$	$x+1-x = 1$	$x+1-x = 1$
$x+1-x = 1$	$x+1-x = 1$	$x+1-x = 1$

$R_F = \mathbb{R}$

هـ) $y = [x] + [x-1] \Rightarrow [x] + [-x] + 1$

$x \in \mathbb{Z} \rightarrow 1$
 $x \notin \mathbb{Z} \rightarrow 0$

ب) $y = [x]$

$-1, 0, 1, 2, \dots \rightarrow x+1$
 $-1, 0, 1, 2, \dots \rightarrow x+1$
 $-1, 0, 1, 2, \dots \rightarrow x$
 $-1, 0, 1, 2, \dots \rightarrow x-1$
 $x=1 \rightarrow 1-1=0$

$R_F = [-1, 1)$

و) $y = \sin^2 x - \sin x + 1$

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

$R_F = [1, 3]$

ز) $y = \sin^2 x + \sin x + 1$

$\max \rightarrow 1+1+1=3$
 $\min \rightarrow 0+0+1=1$
 $\frac{-b}{2a} \rightarrow \frac{-1}{2} \rightarrow -0.5$

$R_F = [1, 3]$