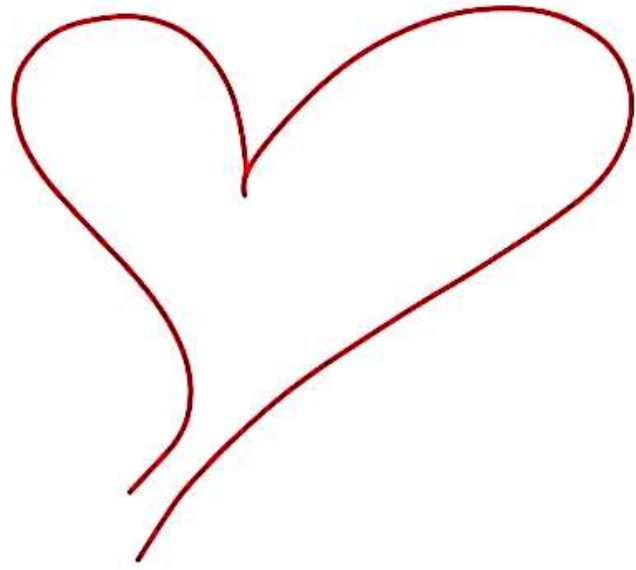


کرای پر خطی
د
سحر



حداقل بخش ها مربوط به هر سوال رو
پشت هم بنویس :

$$y = \frac{|n|+1}{|n|-2} \Rightarrow y|n|-2y = |n|-1 \Rightarrow y|n|-|n| = 1-2y$$

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

در این صورت مقدمات

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

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

$$\Rightarrow n^2 + (2-y)n - 2y - 2 = 0 \Rightarrow n = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \Delta \geq 0 \Rightarrow b^2 - 4ac \geq 0$$

$$\Rightarrow (2-y)^2 - 4(1)(-2y-2) = 4 + y^2 - 4y + 8y + 8 = y^2 + 4y + 12 \geq 0$$

$$f(n) = \frac{n^2 - n + 1}{n^2 - n + 1} \Rightarrow D_f \Rightarrow n^2 - n + 1 \neq 0 \Rightarrow \Delta = b^2 - 4ac = 1 - 4 = -3 < 0$$

$$= -3 < 0 \Rightarrow \frac{1}{n^2 - n + 1} > 0 \Rightarrow D_f = \mathbb{R}$$

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

$$\Rightarrow y = 1$$

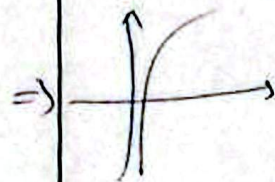
$$y = \frac{n^2 - n + 1}{n^2 - n + 1} \Rightarrow y' = -\frac{n^2 + 2n - 2}{(n^2 - n + 1)^2}$$

$$\Rightarrow y' = -\frac{n^2 + 2n - 2}{(n^2 - n + 1)^2} \Rightarrow y' = -\frac{n^2 + 2n - 2}{(n^2 - n + 1)^2}$$

$$\Rightarrow R_y = [0, \sqrt{2}]$$

$$y = \frac{n^2 - n + 1}{n^2 - n + 1}$$

$$y = \frac{n^2 - n + 1}{n^2 - n + 1}$$



$$\Rightarrow y = \frac{n^2 - n + 1}{n^2 - n + 1} \Rightarrow y = \frac{n^2 - n + 1}{n^2 - n + 1}$$

2. صیغہ A و B

سوال 1

بعض (ب) $y = \frac{x^2 + 1}{x} \Rightarrow y = \frac{x^2 + 1}{x} \Rightarrow x + \frac{1}{x} = x + \frac{1}{x}$

$\leftarrow$ $[2, +\infty)$ و $(-\infty, -2]$

$\Rightarrow R_f = [2, +\infty)$ ✓

سوال 2 $y = \sqrt{x^2 - 4x} \Rightarrow y' = \frac{x-2}{\sqrt{x^2 - 4x}} = 1 \Rightarrow x - 2 = \sqrt{x^2 - 4x} \Rightarrow x^2 - 4x = x^2 - 4x \Rightarrow x \geq 4$

$\Rightarrow R_y = [-2, +\infty)$ ✓

بعض (ب)

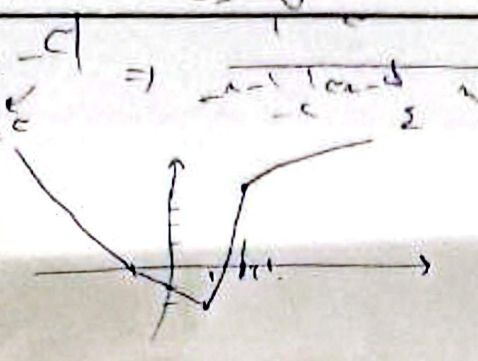
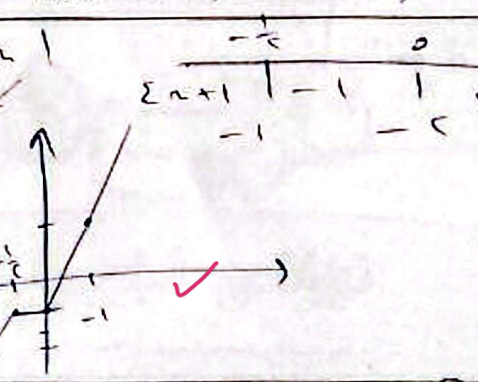
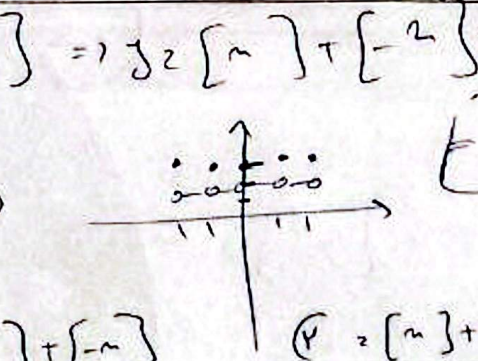
سوال 3

بعض (ب)

$y = \left(\frac{x+1}{x} \right)^2$

محدود و غیر محدود
 $y = \left(\frac{x+1}{x} \right)^2 = \left(1 + \frac{1}{x} \right)^2$
 ان کا رینج $(-\infty, -2]$ و $[2, +\infty)$ ہے۔

$\leftarrow$ $[2, +\infty)$
 $R_y = [1, +\infty)$ ✓

انذ $x-2 - x-1 = \frac{x-1}{2} + 1$ $x < 1$ $x > 2$ $R_f = [-2, +\infty)$ 	(2) 6
$x-2 - x+1 \leq 1$ $x < -1$ $-1 < x < 2$ $x > 2$ $R_f = (-\infty, -1] \cup [-\frac{1}{2}, +\infty)$ $\Delta = x \leq -1 \Rightarrow x+1 \leq 0 \Rightarrow x \leq -1 \wedge x \leq -1 \wedge x \leq -1 \Rightarrow x \leq -1$ $\square = -1 < x < 2 \Rightarrow -x+1 \leq 1 \Rightarrow x > 0 \Rightarrow -1 < x < 2 \wedge x > 0 \Rightarrow 0 < x < 2$ $\bigcirc = x > 2 \Rightarrow -x-1 \leq 1 \Rightarrow -x \leq 2 \Rightarrow x \geq -2 \Rightarrow x > 2 \wedge x \geq -2 \Rightarrow x > 2$	(2) 7
$y = x - x+1 + x$ $x < -1$ $-1 < x < 0$ $x > 0$ $R_f = \mathbb{R}$ 	(2) 8
انذ $y = [x] + \{x-2\} \Rightarrow y = [x] + [-2] + x$  $R_f = \{x, y\}$	(2) 9
انذ $y = \sin^2 x - \sin x + 1$ $\sin x = -1 \Rightarrow y = (-1)^2 - (-1) + 1 = 3$ $\sin x = \frac{1}{2} \Rightarrow y = (\frac{1}{2})^2 - \frac{1}{2} + 1 = \frac{3}{4}$ $\sin x = 1 \Rightarrow y = 1 - 1 + 1 = 1$ $R_f = [\frac{3}{4}, 3]$	(2) 10

ب) $y = \sin^2 x + \sin^2 x + 1$

$\sin^2 x = 0 \Rightarrow y = 0 + 0 + 1 = 1$

$\sin^2 x = 1 \Rightarrow y = 1 + 1 + 1 = 3$

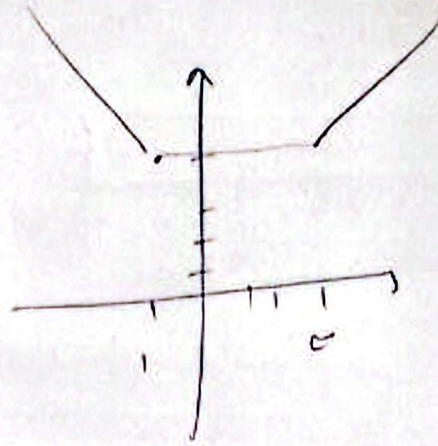
$R_f = [1, 3]$

AK (A) لے مے

سداں لے مے (ب)

$$y \geq |x-1| + |y+1|$$

$\swarrow$ $\searrow$
 1 -1



$$Ry \geq [\epsilon, +\infty)$$

سداں لے مے (ب)

$$y \geq \lfloor x \rfloor, -1 \leq x < 2$$

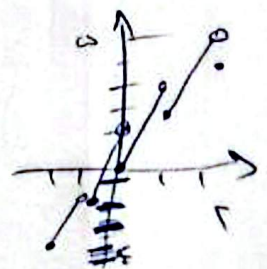
$$-1 \leq x < -1 \Rightarrow \lfloor x \rfloor = -1 \Rightarrow x+1 = y$$

$$-1 \leq x < 0 \Rightarrow \lfloor x \rfloor = -1 \Rightarrow x+1 = y$$

$$0 \leq x < 1 \Rightarrow \lfloor x \rfloor = 0 \Rightarrow x = y$$

$$1 \leq x < 2 \Rightarrow \lfloor x \rfloor = 1 \Rightarrow y = x-1$$

$$x=1 \Rightarrow \lfloor x \rfloor = 1 \Rightarrow y = x-1$$



$$Ry \geq [-\epsilon, 0)$$