

دوازدهم فصل

تکلیف ۲

نمایش ساه نظری

الف) $f(x) = 2 \sin^2(x + \frac{\pi}{4}) - 1$

①

$0 \leq \sin^2(x + \frac{\pi}{4}) \leq 1$

$0 \leq 2 \sin^2(x + \frac{\pi}{4}) \leq 2 \rightarrow -1 \leq 2 \sin^2(x + \frac{\pi}{4}) - 1 \leq 1$

$R_f = [-1, 1]$

ب) $g(x) = 3 \cos^2 x - 4$

$-1 \leq \cos^2 x \leq 1 \rightarrow -3 \leq 3 \cos^2 x \leq 3 \rightarrow -7 \leq 3 \cos^2 x - 4 \leq -1$

$R_g = [-7, -1]$

$y = \frac{x}{|x|} + [x] \quad x \in [-4, -1) \rightarrow y = -1 - 1 = -2$

②

$x \in [-1, 0) \rightarrow y = -1$

$x \in [0, 1) \rightarrow y = 0$

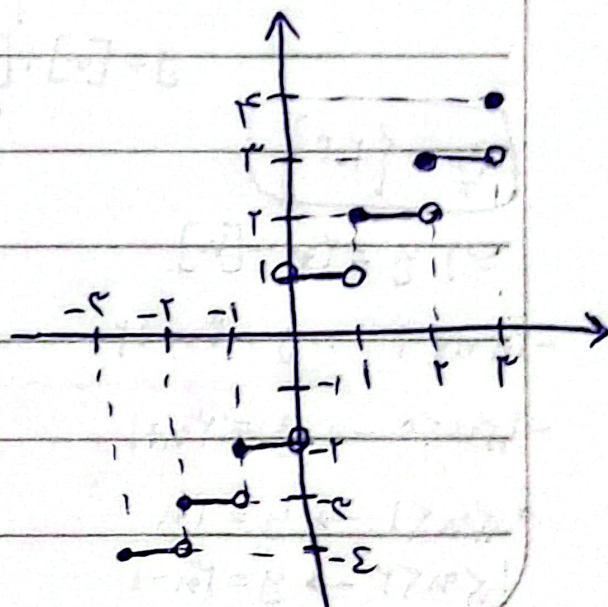
$x = 0 \rightarrow X$

$x \in (0, 1) \rightarrow y = 1$

$x \in [1, 2) \rightarrow y = 2$

$x \in [2, 3) \rightarrow y = 3$

$x \in \{3\} \rightarrow y = 4$





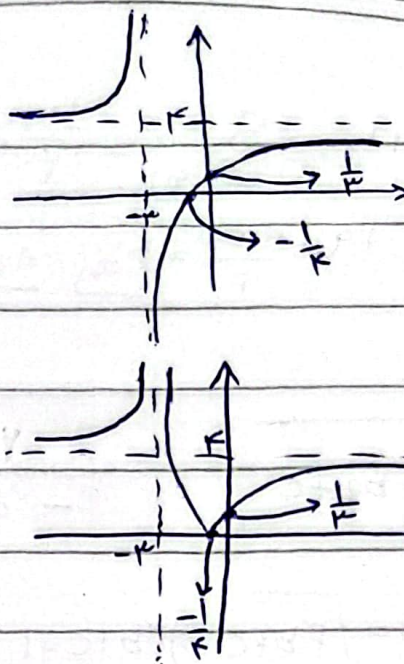
$$y = \left| \frac{r_1 n + 1}{n + r} \right| \rightarrow y = \frac{r_1 n + 1}{n + r}$$

$$n = 0 \rightarrow y = \frac{1}{r}$$

$$y = 0 \rightarrow n = -\frac{1}{r_1}$$



$$y = \left| \frac{r_1 n + 1}{n + r} \right|$$



(3)

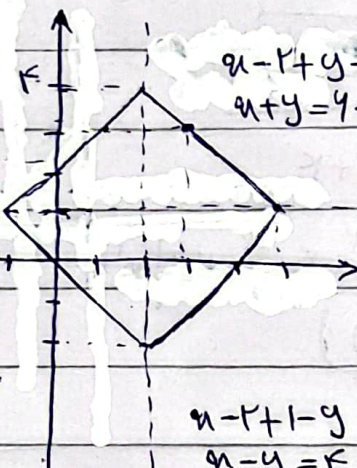
$$r - n + y - 1 = r$$

$$y - n = r$$

$$y = n + r$$

$$n - r + y - 1 = r$$

$$n + y = r \rightarrow y = r - n$$



$$r - n + 1 - y = r$$

$$n + y = 0$$

$$y = -n$$

$$n - r + 1 - y = r$$

$$n - y = r$$

$$y = n - r$$

$$f(n) = n + \frac{1}{n} + r \sqrt{n + \frac{1}{n}}$$

$$\sqrt{n + \frac{1}{n}} = t \rightarrow f(n) = t^2 + r t \rightarrow \frac{-b}{2a} = -1$$

$$t_{\min} = \sqrt{r} \rightarrow f(n) = r + r\sqrt{r}$$

$$R_f = [r + r\sqrt{r}, +\infty)$$

$$y = (r - \sin n)(1 + \sin n) = -\sin^2 n + r \sin n + r$$

$$\sin n$$

$$1 \rightarrow -1 + r + r = r$$

$$-1 \rightarrow -1 - r + r = 0$$

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

$$R_f = [0, r]$$

$$f(n) = -\frac{1}{p}n + 10 \rightarrow S_{f(n)} = -\frac{1}{p}S_n + 10n \quad (4)$$

$$S_n = 1 + p + \dots + 9 = \frac{9 \times 10}{p} = 10 \quad n=9 \Rightarrow S_{f(n)} = -\frac{1}{p} \times 10 + 90 = 90 - 10 = 80 \quad \boxed{V \Delta}$$

$$f(n) = \sqrt{an^2 + bn + c} \quad \begin{matrix} p \\ - \phi + \end{matrix} \quad (5)$$

بنابر این نتیجه می گیریم

عبارت درجه یک است $\left[a=0 \right]$

$$f(3) = 1 \rightarrow 1 = \sqrt{3b + c} \rightarrow 3b + c = 1$$

$$f(2) = 0 \rightarrow 0 = \sqrt{2b + c} \rightarrow 2b + c = 0$$

$$\boxed{b=1} \quad \boxed{c=-2}$$

$$g(n) = \sqrt{bn^2 + an - 2c} \rightarrow g(n) = \sqrt{n^2 + 4}$$

$$0 \leq n^2 \rightarrow 4 \leq n^2 + 4 \rightarrow 2 \leq \sqrt{n^2 + 4}$$

$$\boxed{R_g = [2, +\infty)}$$

$$f(n) = \frac{n^2 - 4n}{n+2} = \frac{n(n+2)(n-2)}{n+2} = n(n-2) \quad (6)$$

$$n \neq -2 \quad (1)$$

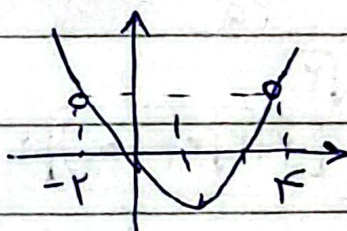
$$n(n-2) \neq 1$$

$$n^2 - 2n - 1 \neq 0$$

$$n \neq 1 \quad (2)$$

$$n \neq -2$$

$$\boxed{a, b \rightarrow -2, 4}$$



$$\rightarrow n=1 \rightarrow \boxed{c = n(n-2) = -1}$$

$$f\left(\frac{a+b}{p}\right) = f(-1) = n(n-2) = (-1)(-2) = 2$$

⑨ نتایج مختلفی است بنابراین عبارت داخل را می توان ۳ است.

$$y = \sqrt{(x-2)^2} \Rightarrow y = \sqrt{x^2 - 4x + 12x - 1} \Rightarrow y = \sqrt{x^2 + ax + b} - 1$$

$$\begin{cases} a = -4 \\ b = 12 \end{cases} \rightarrow -4 < x < 12$$

$$y = x - 2$$

$$-1 < x - 2 < 10$$

$$-1 < y < 10$$

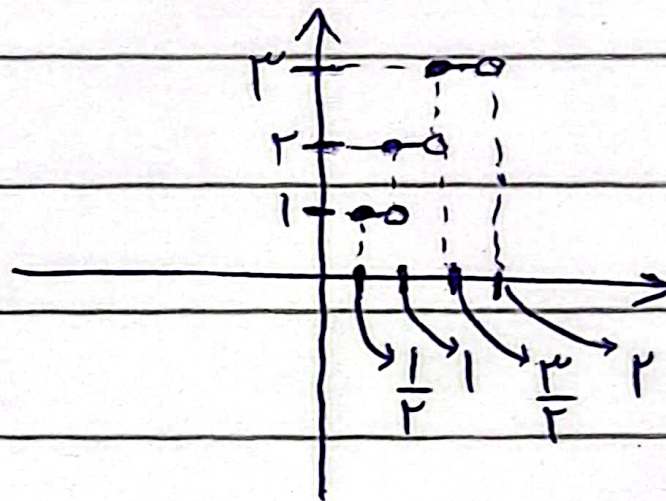
$$R_f = [-1, 10]$$

$$y = [x] + \left[x + \frac{1}{f}\right]$$

$$x \in \left[\frac{1}{f}, 1\right) \rightarrow y = 1$$

$$x \in \left[1, \frac{2}{f}\right) \rightarrow y = 2$$

$$x \in \left[\frac{2}{f}, 2\right) \rightarrow y = 3$$



از هر یک از این ها می توانیم