

بازرسی

تکلیف

محمد اسحاق حسینی

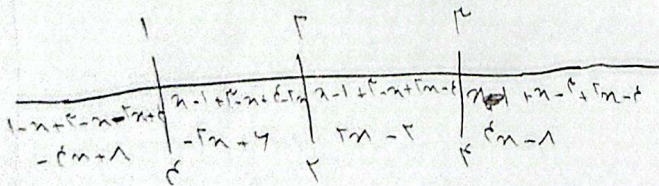
$$f(n) = \{(-1, 0), (0, 1), (1, 0)\} \quad g(n) = \{(-1, 2), (0, 0), (1, -1)\}$$

$$R = \{2, 0, 0\}$$

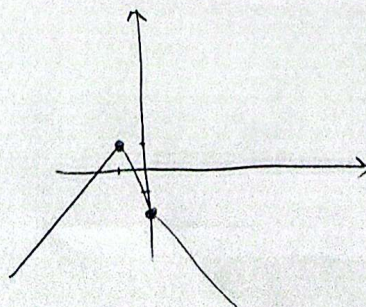
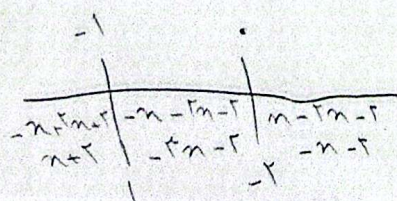
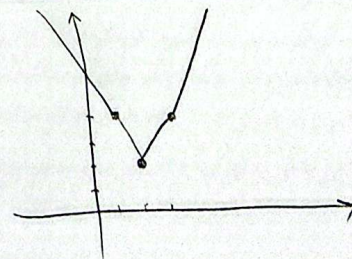
$$\left. \begin{aligned} f(n) &= n-1 \xrightarrow{D_f: [2, +\infty)} R_f = [0, +\infty) \\ g(n) &= \frac{1}{n} n+2 \xrightarrow{D_g: (-\infty, 1]} R_g = (-\infty, 1] \end{aligned} \right\} R_f \cup R_g = (-\infty, 1] \cup [0, +\infty)$$

$$-\frac{nx^2}{x} + nx+2 \geq \frac{2}{x} \Rightarrow x^2 - 2x - 2 \leq 0 \Rightarrow (x-2)(x+1) \leq 0$$

$$\Rightarrow \begin{cases} a = -1 \\ b = 2 \end{cases} \quad \sqrt{b-a}, \sqrt{b-a-1} \leq \sqrt{2} = 2$$



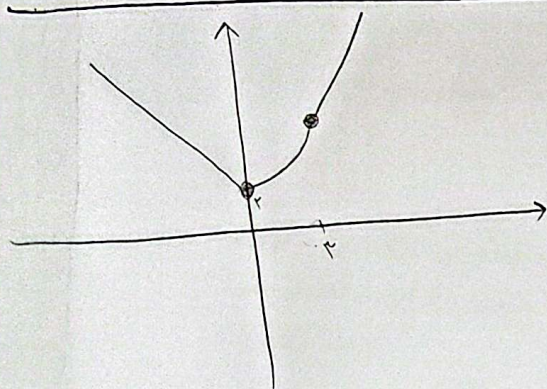
$$\Rightarrow y_{\min} = 2$$



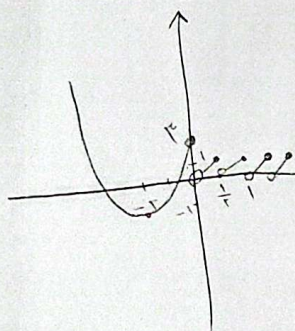
$$\Rightarrow R = (-\infty, 1]$$

$$y^2 + y \leq x^2 + 2x + m \Rightarrow x^2 + (2-y)x + m-y \geq 0 \quad \Delta_1 \geq 0$$

$$\Rightarrow \Delta_1 = (2-y)^2 - 4(m-y) = y^2 - 4y + 4a - 4m = y^2 - 4y + 4a - 4m$$



$$\Rightarrow R = [2, +\infty)$$



$$\Rightarrow R = [-1, +\infty)$$

$$x^2 + x \geq 0 \Rightarrow x \geq -\frac{1}{2} \Rightarrow b \geq -\frac{1}{2} \Rightarrow a+1 - \sqrt{2b+1} = a+1 = a \Rightarrow a \leq b$$

$$\Rightarrow a, b \in (-\frac{1}{2}, +\infty)$$

$$g(n) = 2\sqrt{2+\sqrt{1-n^2}} - 2\sqrt{n+1} - 2\sqrt{1-n}$$

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

$$= \frac{\sqrt{n+1} + \sqrt{1-n} - \sqrt{2+\sqrt{1-n^2}}}{2} = \sqrt{n+1} + \sqrt{1-n} - \sqrt{2+\sqrt{1-n^2}} \quad D_f = [-1, 1]$$

$$\begin{aligned} n=1 &\Rightarrow y=0 \\ n=0 &\Rightarrow y=1 \\ n=-1 &\Rightarrow y=2\sqrt{2}-\sqrt{2+\sqrt{1-n^2}} = \sqrt{2} \end{aligned} \Rightarrow R = [-1, 1]$$