

$$f(x) = \sqrt{1-x^2} \quad 1-x^2 \geq 0 \Rightarrow -1 \leq x \leq 1$$

$$g(x) = \{(-1, 1), (0, 1), (1, 1)\}$$

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

$$f'g(-1) - f'f(-1) = 1 \cdot 1 - 1 \cdot 0 = 1$$

$$f'g(0) - f'f(0) = 1 \cdot 1 - 1 \cdot 0 = 1$$

$$f'g(1) - f'f(1) = 1 \cdot 2 - 1 \cdot 0 = 2$$

$$f'g(1) - f'f(1) = 1 \cdot 2 - 1 \cdot 0 = 2$$

$$f(x) = x-1 \quad D_f = [1, +\infty) \quad R_f = [0, +\infty)$$

$$g(x) = \frac{1}{x}x+1 \quad D_g = (-\infty, 1] \quad R_g = (-\infty, 1]$$

$$R_f \cup R_g = \mathbb{R} - (1, 2)$$

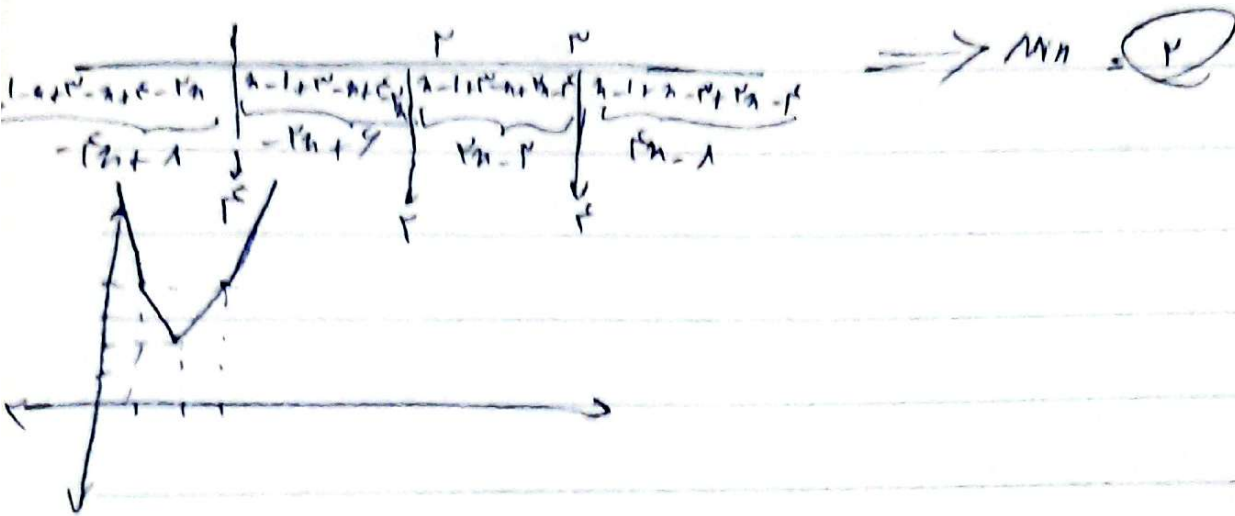
$$y = \frac{-x^2}{x} + x + 1$$

$$\frac{-x^2}{x} + x + 1 > \frac{1}{x} \rightarrow \frac{-x^2}{x} + x + \frac{1}{x} > 0 \xrightarrow{\times x} x^2 - x - 1 < 0$$

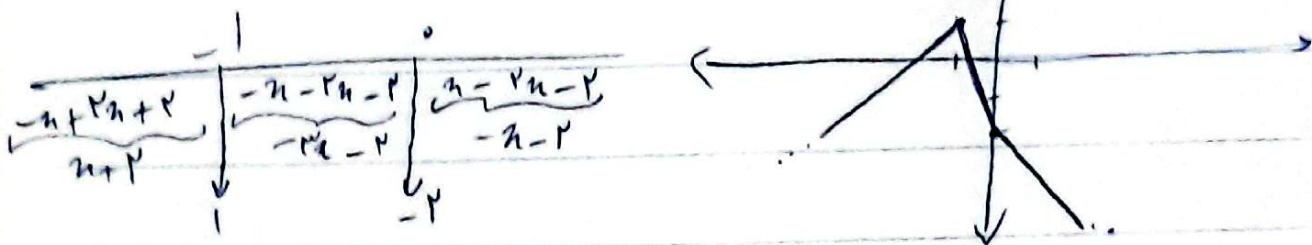
$$(x-1)/(x+1) < 0 \quad \frac{-1}{+} \frac{1}{-} \rightarrow (-1, 1) = (a, b)$$

$$\begin{matrix} a = -1 \\ b = 1 \end{matrix} \quad \sqrt{b-a} \xrightarrow{\text{Max}} \sqrt{b-a} = \sqrt{1-(-1)} = \sqrt{2}$$

$$c - y = |n-1| + |n-2| + |2n-5|$$



$$d - y = |n| - 2|n+1|$$



$$R_f = (-\infty, 1]$$

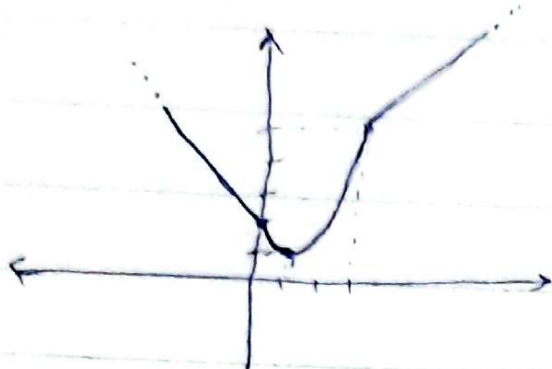
$$g - y = \frac{n^2 + \omega n + m}{n+1} \quad y^2 + y = n^2 + \omega n + m \rightarrow n^2 + (\omega - y)n + my = 0$$

$$\Delta \geq 0 \rightarrow y^2 - 1 + y + \omega - f_m + fy \geq 0 \rightarrow y^2 - y + \omega - f_m \geq 0$$

$$\Delta \geq 0 \rightarrow y^2 - y + (\omega - f_m) \geq 0 \rightarrow m \leq \frac{y^2 - y + \omega}{y} \quad \text{چون } m = 1, 2, 3 \text{ در نظر می‌گیریم}$$

مورد خاصی

$$V = f(x) \begin{cases} x+r, & x \geq r \\ x^2 - rx + r, & 0 \leq x < r \\ |x|+r, & x < 0 \end{cases} \quad \frac{r}{r} = 1 \quad 1-r+r=1$$



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

$$1 - f(x) \begin{cases} x^2 + rx + r, & x \leq 0 \\ [rx] - rx, & x > 0 \end{cases} \quad \frac{-r}{r} = -1 \quad f(x) = -1 \rightarrow R_f = [-1, +\infty)$$

$$R_1 \cup R_2 = [-1, +\infty)$$

$$9 - y = a + 1 - \sqrt{r(x+r)}$$

$$r(x+r) \geq 0 \rightarrow x \geq -\frac{r}{r} \rightarrow R_f = [-\frac{r}{r}, +\infty) \quad b = -\frac{r}{r}$$

$$\begin{matrix} [-\infty, a+1] \\ a+1 - \sqrt{r(x+r)} \\ [0, +\infty) \end{matrix} \rightarrow a = r \quad \text{ab} = -9$$

$$10 - f(x) + g(x) = r \sqrt{r + r \sqrt{1-x}} = r \sqrt{(\sqrt{1-x} + \sqrt{1+x})^2} = r \sqrt{1-x} + r \sqrt{1+x}$$

$$g(x) = \sqrt{1+x} - \sqrt{1-x}$$

$$y = \frac{f(x)}{g} = \frac{g(x)}{r} \rightarrow \frac{\sqrt{1+x} + \sqrt{1-x}}{r} - \frac{\sqrt{1+x} - \sqrt{1-x}}{r} = \frac{r \sqrt{1-x}}{r} = \sqrt{1-x} \rightarrow R = [0, +\infty), D = [-1, 1]$$