

$$f(m) = \sqrt{1-x^2}$$

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

$$rg - cf \rightarrow rg = \{(-1, 2)(0, 2)(1, 2)\}$$

$$cf = 3\sqrt{1-x^2} \rightarrow Df: 1-x^2 \geq 0$$

$$x^2 \leq 1 \rightarrow -1 \leq x \leq 1$$

$$f(-1) = 0$$

$$f(0) = 3$$

$$f(1) = 0$$

$$D_{cf \cap rg} = \{-1, 0, 1\}$$

$$\Rightarrow rg - cf:$$

$$\{(-1, 2)(0, 2)(1, 2)\} - \{(-1, 0)(0, 3)(1, 0)\}$$

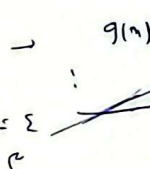
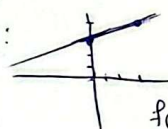
$$= \{(-1, 2)(0, 2)(1, 2)\}$$

$$x = \{2, 0, 2\} \rightarrow 2+0+2 = (11)$$

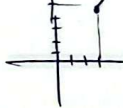
$$f(m) = 2x-1 \rightarrow Df: [c, +\infty) \rightarrow f(m):$$

$$g(m) = \frac{1}{x}x + c \rightarrow Dg: (-\infty, c]$$

$$g(m):$$



$$f(m):$$



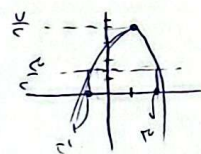
$$Rf: [c, +\infty)$$

$$Rf \cup Rg: \left[\begin{array}{c} \frac{c}{2} \\ \frac{c}{2} \end{array} \right] \cup \left[\begin{array}{c} \frac{c}{2} \\ \frac{c}{2} \end{array} \right] = \left[\begin{array}{c} \frac{c}{2} \\ \frac{c}{2} \end{array} \right]$$

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

$$\left\{ \frac{-b}{2a} = \frac{-1}{-1} = 1 \right.$$

$$f(1) = \frac{-1}{2} + 1 + c = \frac{1}{2} + c$$



$$\frac{-x^2}{2} + x + c = \frac{c}{2}$$

$$\frac{x^2}{2} - x - \frac{c}{2} = 0$$

$$x^2 - 2x - c = 0$$

$$(x-c)(x+1) = 0$$

$$\begin{cases} x = c \\ x = -1 \end{cases}$$

$$\begin{cases} \text{نقطهٔ بیشینه} = c \\ \text{نقطهٔ کمینه} = -1 \end{cases}$$

نقطهٔ بیشینه

$$\sqrt{b-a} : \sqrt{c+1} = (2)$$

چون از بازه

است و بر تابع بیشینه

$$y = |x-1| + |x-2| + |x-3|$$

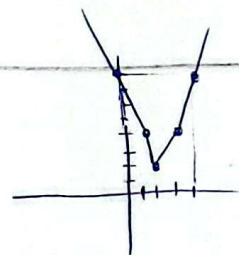
$$f(1) = 2+2=4$$

$$f(2) = 2+2=4$$

$$f(3) = 1+1=2$$

$$f(4) = 3+1+2=6$$

$$f(5) = 1+3+2=6$$

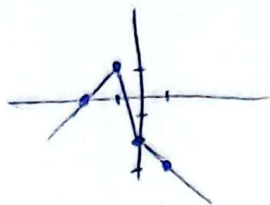


$$\text{نقطهٔ بیشینه} : (2)$$

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

$$f(1) = -r \quad f(1) = 1 - \varepsilon = -r$$

$$f(-1) = 1 \quad f(-1) = r - r = 0$$



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

$$y = \frac{n^2 + \omega n + m}{n+1} \rightsquigarrow n^2 + \omega n + m = y(n+1)$$

$$n^2 + (\omega - y)n + m - y = 0$$

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

$$= \omega^2 - 2\omega y + y^2 - 4m + 4y$$

$$= y^2 - 4y + \omega^2 - 4m$$

$$m = 1, 2, \dots$$

$$m < \varepsilon$$

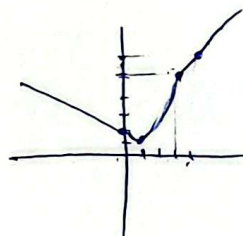
$$14m - 4\varepsilon < 0$$

$$-14m < 4\varepsilon$$

$$\Delta < 0 \Rightarrow y^2 - 4y + (\omega^2 - 4m) < 0$$

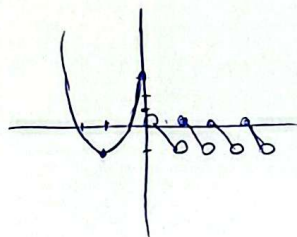
$$y^2 - 4y + 1 - 14m < 0$$

$$f(n) = \begin{cases} n+r & n > c \rightarrow f(c) = \omega / f(c) = 4 \\ n^2 - r n + r & n \leq c \rightarrow f(c) = r \\ |n| + r & n < 0 \rightarrow f(c) = 9 - 4 + r = \omega \\ f(1) = 1 \end{cases}$$



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

$$f(n) = \begin{cases} n^2 + \varepsilon n + c & n \leq 1 \rightarrow f(1) = c \rightarrow \frac{-b}{2a} = \frac{-\varepsilon}{2} = -r \rightarrow f(-r) = \varepsilon - 1 + c = -1 \\ [r_n] - r_n & n > 1 \end{cases}$$



$$R_f: [-1, +\infty)$$

$$y = a + 1 - \sqrt{r n + c}$$

$$D_f: [b, +\infty) \rightsquigarrow D_f: (n + c)^2 \rightarrow (n + c)^2 = c$$

$$n > -\frac{c}{r} \rightarrow [-\frac{c}{r}, +\infty)$$

$$R_f: (-\infty, \omega]$$

$$L R_f: \sqrt{r n + c} = -y + a + 1 \rightarrow -y + a + 1 \geq 0 \rightarrow y \leq a + 1$$

$$R_f: y \leq \omega$$

$$ab: f \times \frac{c}{r} = [-9]$$

$$\rightarrow a + 1 = \omega \rightarrow a = f_1$$

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

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

$$Df = Dg$$

① $\Rightarrow y = \frac{f(n)}{r} - \frac{g(n)}{r} \rightsquigarrow \frac{f(n)}{r} - \frac{(r\sqrt{r+r\sqrt{1-n^2}} - f(n)) \times r}{r \times r} = \frac{f(n) - r\sqrt{r+r\sqrt{1-n^2}} + r f(n)}{r}$

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

② $\Rightarrow D_f : \begin{cases} n+1 \geq 0 \rightarrow n \geq -1 \\ 1-n \geq 0 \rightarrow n \leq 1 \end{cases} \Rightarrow D_f = D_g = [-1, 1]$

$\begin{cases} \text{(min)} \\ n = -1 : r\sqrt{r} - \sqrt{r} = \sqrt{r} \\ n = 0 : 1+r-r = 1 \\ \text{(max)} \\ n = 1 : \sqrt{r} - \sqrt{r} = 0 \end{cases}$

$$R_f : [0, \sqrt{r}]$$