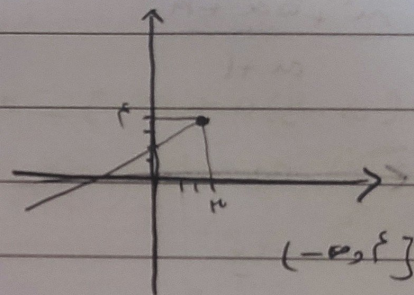
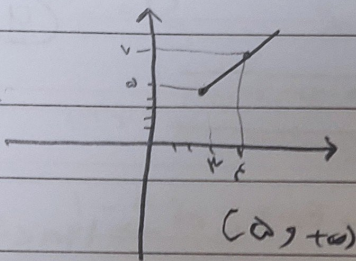


ساده ترین حالت بزرگ و کوچک تقریب نگاره

① $f(x) = \sqrt{1-x^2}$ $g = \{(-1, 0), (0, 1), (1, 0)\}$

$2g - 3f = \{(-1, 2-3\sqrt{1-(-1)^2}), (0, 2-3\sqrt{1-0}), (1, 2-3\sqrt{1-1})\}$
 $= \{(-1, -1), (0, 2), (1, -1)\}$
 $\rightarrow 2+1+0=3$

② $f(x) = 2x-1$ $[2, +\infty)$ $g(x) = \frac{1}{x}x+3$ $(-\infty, 3]$



$R_f \cup R_g = (-\infty, 3] \cup [2, +\infty)$

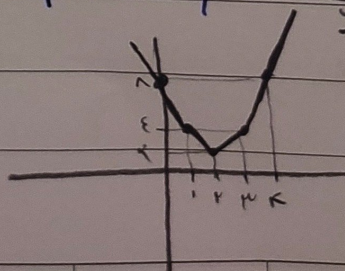
③ $y = \frac{-x^2}{r} + x + r$ $(a, b) \rightarrow \frac{r}{r}$ $\sqrt{b-a}$ man?
 $\rightarrow (\frac{r}{r}, +\infty)$

$\frac{-x^2}{r} + x + r > \frac{r}{r} \rightarrow -x^2 + rx + r > 1 \rightarrow -(x-3)(x+1) > 0$
 $-(x^2 - 2x - 3)$

$- \quad | \quad + \quad | \quad -$ $(-1, 3) \rightarrow a = -1 \quad b = 3$

$\min \sqrt{b-a} \rightarrow \sqrt{3-(-1)} = 2$

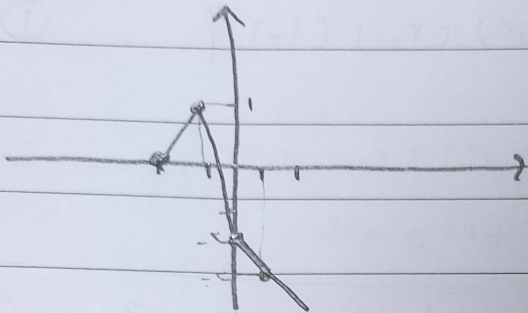
④ $y = |x-1| + |x-3| + |2x-4|$
 $\min y = 2$



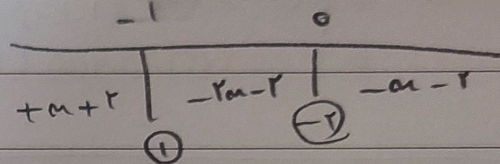
$$y = |a| - 2|a+1|$$

$$\begin{array}{c|ccc} a & -2 & -1 & 0 & +1 \\ \hline y & 0 & 1 & -2 & -3 \end{array}$$

(3)



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



$$y = \frac{m^2 + 2a + m}{a+1}$$

$$ya + y = m^2 + 2a + m$$

(4)

$$m^2 + (2-y)a + m - y = 0 \rightarrow a = \frac{y - 2 \pm \sqrt{(2-y)^2 - 4m + 4y}}{2}$$

$$\Rightarrow y^2 - 4y + 4m \geq 0 \xrightarrow{\Delta \leq 0} 4y - 4(2 - 4m) \leq 0 \rightarrow 14m \leq 4y$$

$$m \leq \frac{y}{14} \rightarrow \{1, 2, 3\}$$

$$m \leq 4 \leftarrow \text{از این عددی رانده شود}$$

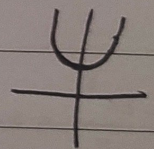
$$f(a) = \begin{cases} a+2 & a \geq 2 \\ a^2 - 2a + 2 & 0 \leq a < 2 \\ |a| + 2 & a < 0 \end{cases}$$

$$R_1 = [2, +\infty) \quad \frac{a+2}{a} \rightarrow \frac{1}{a} + 2$$

(5)

$$\rightarrow y = (a-1)^2 + 1 \rightarrow \text{st}$$

$$\rightarrow R_{y_2} = [1, +\infty)$$



$$\begin{array}{c|ccc} a & 0 & 1 & 2 \\ \hline y & 2 & 1 & 2 \end{array}$$

$$\begin{array}{c|ccc} a & 0 & 1 & 2 \\ \hline y & 2 & 1 & 2 \end{array}$$

$$R_y = [-1, +\infty)$$

$$f(a) = \begin{cases} m^2 + 2a + 2 & m \leq 0 \rightarrow \text{st} \rightarrow R_1 = [-1, +\infty) \\ [2a] - 2a & m > 0 \rightarrow R_2 = (-1, 0] \end{cases}$$

(6)

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

9 $y = a + 1 - \sqrt{2a+1}$ $\Delta = [b, +\infty)$ $\text{بر } (-\infty, a]$ $ab = ?$

$2a+1 \geq 0 \rightarrow a \geq -\frac{1}{2} \rightarrow b = -\frac{1}{2}$

$\sqrt{2a+1} = 0 \rightarrow a = -\frac{1}{2} \rightarrow y = a + 1 = 0 \rightarrow a = -\frac{1}{2}$
 $ab = -\frac{1}{2} \times \frac{1}{2} = -\frac{1}{4}$

10 $f(x) = 2\sqrt{x+1} + 4\sqrt{1-x}$ $f(x) + g(x) = 4\sqrt{1+x}$

$P_f = P_g \quad y = \frac{f(x)}{4} - \frac{g(x)}{4}$

$x+1 \geq 0 \rightarrow x \geq -1$

$1-x \geq 0 \rightarrow x \leq 1$

$x \in [-1, 1]$

$f(1) = 2\sqrt{2} \quad f(-1) = 6\sqrt{2}$

$f(0) = 4$

$\frac{f(1)+g(1)}{2\sqrt{2}} = \frac{4\sqrt{1+1}}{2\sqrt{2}} \rightarrow g(1) = 4\sqrt{2} - 2\sqrt{2} = 2\sqrt{2}$

$\frac{f(-1)+g(-1)}{6\sqrt{2}} = \frac{4\sqrt{1+(-1)}}{6\sqrt{2}} \rightarrow g(-1) = 4\sqrt{2} - 6\sqrt{2} = -2\sqrt{2}$

$P_g = \frac{f(x)}{4} - \frac{g(x)}{4} \rightarrow g(-1) = \frac{6\sqrt{2}}{4} - \frac{-2\sqrt{2}}{4} = \frac{8\sqrt{2}}{4} = 2\sqrt{2}$
 $g(1) = \frac{2\sqrt{2}}{4} - \frac{2\sqrt{2}}{4} = 0$