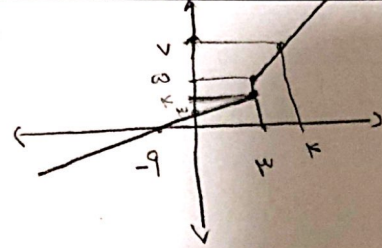


17, 20

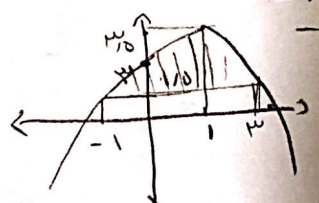
$f(x) = \sqrt{1-x^2} \rightarrow 1 \geq x^2 \rightarrow 1 \geq x \geq -1 \rightarrow x \in [-1, 1] \rightarrow f(x) = \{(1,0), (-1,0), (0,1)\}$
 $g = \{(-1,1), (0,2), (1,0), (1,2)\}$
 $h = \{(1,0), (-1,0), (0,2)\}$
 $fg = \{(-1,2), (0,2), (1,0), (1,2)\} \rightarrow fg - h = \{(1,2), (-1,2), (0,2)\} \rightarrow f+g+h = 11$

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

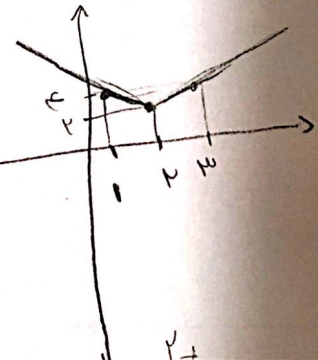


$Rg \cup R_f \rightarrow R - (2, 5)$

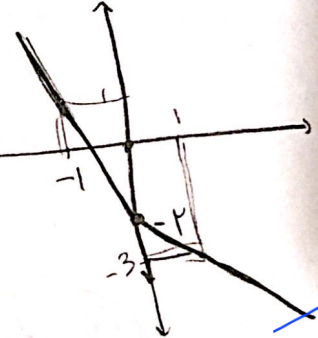
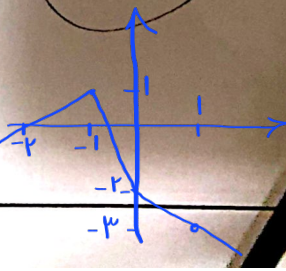
$y = \frac{-x^2}{2} + x + 3 \rightarrow -\frac{x^2}{2} + x + 3 = \frac{3}{2} \rightarrow -\frac{x^2}{2} + x = -\frac{3}{2}$
 $\hookrightarrow D_f = (a, b)$
 $\hookrightarrow (a, b) = (-1, 3)$
 $\hookrightarrow \sqrt{b-a} \rightarrow \sqrt{3-(-1)} = 2$



$y = |x-1| + |x-2| + |x-4|$
 $y_{min} = 2$



$y = |x| - 2|x+1|$
 $R = (-\infty, 1]$
 $R_f = \mathbb{R}$

$$m-f \rightarrow \frac{a+2m+f}{a+1} = a+f, \frac{a+1}{a+1} \text{ IR}$$

$$y = \frac{x^2 + 2x + m}{x+1} \rightarrow yx + y = x^2 + 2x + m$$

$$\rightarrow x^2 + x(2-y) + m-y = 0$$

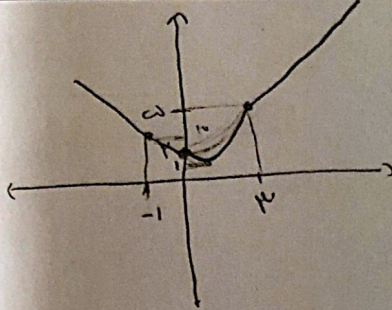
$$\rightarrow (2-y)^2 + 4(1-\varepsilon)(m-y) \geq 0$$

$$\rightarrow 2(2-y)^2 - 4y + 4m \geq 0 \rightarrow y^2 - 4y + 4m \geq 0$$

$$9 - 12 + 4m \rightarrow 14 - 4m \geq 0 \rightarrow m \geq \frac{7}{2}$$

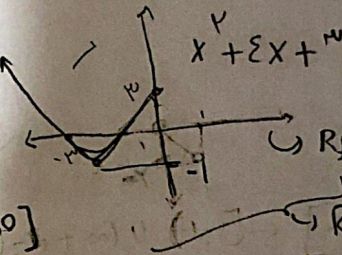
$$m = \{1, 2, 3, 4\}$$

$$f(x) = \begin{cases} x+1 & x \geq 1 \\ x^2 - 2x + 2 & 0 \leq x < 1 \\ |x|+1 & x < 0 \end{cases}$$



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

$$f(x) = \begin{cases} x^2 + 2x + 1 & x \leq 0 \\ [2x] - 2x & 0 < x < 1 \\ 2[2x] - 2x & 1 \leq x < 2 \end{cases}$$



$$R_f = [-1, +\infty) \cup (-1, 0]$$

$$y = a+1 - \sqrt{2x+1} \rightarrow 2x+1 \geq 0 \rightarrow x \geq -\frac{1}{2}$$

$$R_y = (-\infty, \infty] \rightarrow a+1 - (0) = a \rightarrow a = 1$$

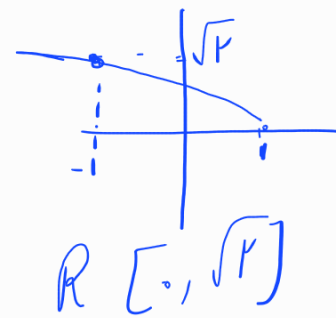
$$f(x) = \sqrt{x+1} + \sqrt{1-x} \rightarrow \begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ 1-x \geq 0 \rightarrow x \leq 1 \end{cases} \rightarrow D_f = [-1, 1]$$

$$f(x) + g(x) = \sqrt{x+1} + \sqrt{1-x} \rightarrow \begin{cases} g(1) = \sqrt{1} \\ g(-1) = -\sqrt{1} \\ g(0) = 0 \end{cases} \rightarrow g(x) = \begin{cases} (1, \sqrt{1}) \\ (-1, -\sqrt{1}) \\ (0, 0) \end{cases}$$

$$f(1) + g(1) = \sqrt{2} + \sqrt{1} = \sqrt{2} + 1$$

$$f(x) + g(x) = \sqrt{x+1} + \sqrt{1-2x} \xrightarrow{\text{POI}} 9(\sqrt{1-2x} + \sqrt{1+x}) \xrightarrow{\text{POI}} \sqrt{x+1} + \sqrt{1-2x}$$

$$\rightarrow g(x) = \sqrt{1+x} - \sqrt{1-2x}$$

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


$R [0, \frac{1}{2}]$