

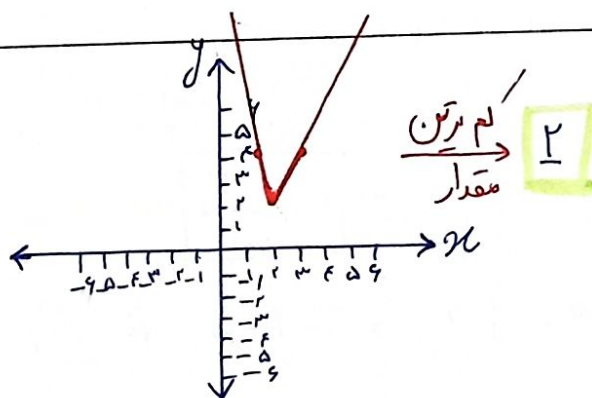
برای x های مشترک $D_f = 1 - x^2 \geq 0 \rightarrow [-1, 1] \rightarrow f(x) = \{(1, 0), (-1, 0), (0, 1)\}$
 $2g - 3f = \{(1, 4), (-1, 2), (0, 5)\} \rightarrow 4 + 2 + 5 = 11$

$R_f = [5, +\infty) \quad R_g = (-\infty, 4]$
 $\hookrightarrow [5, +\infty) \cup (-\infty, 4] = \mathbb{R} - (4, 5)$

$\frac{1}{x} x^2 + x + 3 > \frac{3}{x} \rightarrow \frac{1}{x} x^2 + x + 1 > 0 \rightarrow x^2 - 2x - 3 < 0$
 $(x-3)(x+1) < 0$
 $\frac{-1}{+ \quad - \quad +} \rightarrow (-1, 3) \rightarrow a = -1, b = 3$

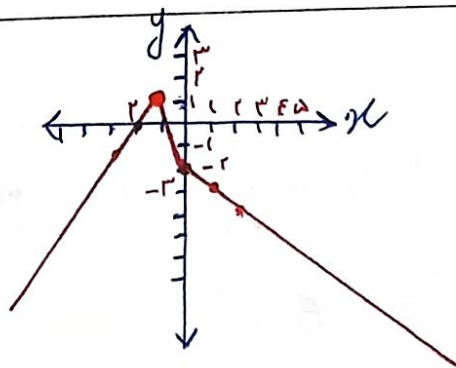
$\sqrt{b-a} = 2$

$x=1 \quad y=4$
 $x=3 \quad y=4$
 $x=2 \quad y=2$



$\frac{-x-2}{-3x-2} \quad x \geq 0$
 $\frac{-x-2}{-3x-2} \quad -1 < x < 0$
 $\frac{x+2}{-3x-2} \quad x < -1$

$R_f = (-\infty, 1]$



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

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

برای اینکه عبارت تابع باشد.

$$34 - 100 + 14m \leq 0 \rightarrow 14m \leq 66 \rightarrow m \leq 4$$

بازای $m=4$ عبارت ساده می شود

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

$$\left. \begin{array}{l} x \geq 3 \rightarrow [3, +\infty) \\ 0 < x < 3 \rightarrow (x-1)^2 + 1 \rightarrow [1, 5) \\ x < 0 \rightarrow (-1, +\infty) \end{array} \right\} \xrightarrow{\text{ایکپارگی}} [1, \infty) = R_f$$

$$\left. \begin{array}{l} x < 0 \rightarrow (x+1)^2 - 1 \rightarrow [-1, +\infty) \\ x > 0 \rightarrow [t] - t \rightarrow [-1, 0] \end{array} \right\} \xrightarrow{\text{ایکپارگی}} [-1, +\infty) = R_f$$

$$Dy = 2x + 3 > 0 \rightarrow x > -\frac{3}{2} \rightarrow b = -\frac{3}{2}$$

$$-\sqrt{2x+3} \in (-\infty, 0] \rightarrow a+1=5 \rightarrow a=4 \rightarrow ab=-9$$

$$f(x) + g(x) = 3 \sqrt{\sqrt{1+x} + \sqrt{1-x}} = 3 \sqrt{1+x} + 3 \sqrt{1-x}$$

$$g(x) = \sqrt{1+x} \quad \sqrt{1-x} \rightarrow \frac{f(x)}{4} - \frac{g(x)}{3} = \frac{2\sqrt{1+x} + 3\sqrt{1-x} - 2\sqrt{1+x} - 3\sqrt{1-x}}{12}$$

$$R_f = [0, \sqrt{2}] \quad x \in [-1, 1]$$