

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

$$\rightarrow 3f \rightarrow \{(-1,0), (0,3), (1,0)\}$$

$$g = f \circ (-1,1) \circ (0,3) \circ (1,0) \rightarrow 2g = \{(-1,2), (0,4), (1,2)\}$$

$$2g - 3f = \{(-1,2), (0,5), (1,2)\} \rightarrow 2 + 5 + 2 = 11$$

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$$f(x) = 2x-1 \rightarrow D_f = [2, +\infty) \sim R = [5, +\infty)$$

$$g(x) = \frac{x}{x} + 3 \rightarrow D_g = (-\infty, 2] \rightarrow R = (-\infty, 4]$$

$\rightarrow \text{عبارت} \rightarrow \mathbb{R} - (4, 5)$

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$$y = \frac{-x^2}{x} + x + 3 \sim a, b, c, d \rightarrow \frac{-x^2}{x} + x + 3 > \frac{x}{x} \sim -x^2 + 2x + 4 > 1$$

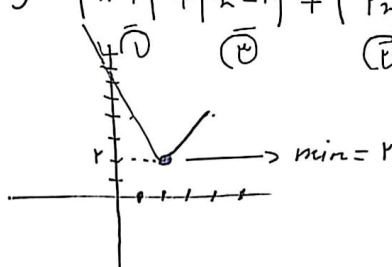
$y > \frac{x}{x}$ مع

$$\sim x^2 - 2x - 3 < 0 \rightarrow (x-3)(x+1) < 0 \rightarrow \frac{-1}{+} \frac{3}{+} \sim (-1, 3)$$

$(\bar{a}, \bar{b})$

$$\Rightarrow a = -1, b = 3 \rightarrow \text{فاصله} = \sqrt{b-a} = \sqrt{3-(-1)} = \sqrt{4} = 2$$

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$$y = |x-1| + |x-3| + |x-4| \rightarrow \frac{1}{-x+1} \frac{2}{-x+3} \frac{3}{x-4}$$


$\min = 2$

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

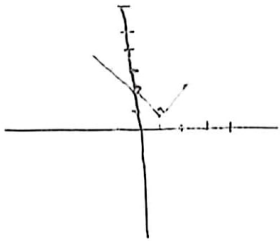
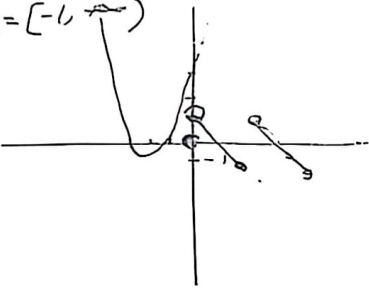
$$\begin{cases} x > 0 \sim -x - 2(-x-1) \rightarrow x+2 \\ -1 \leq x \leq 0 \sim -x - 2x - 2 \rightarrow -3x - 2 \\ x < -1 \sim x - 2x - 2 \rightarrow -x - 2 \end{cases}$$

$x = -2 \sim y = 0$
 $x = -1 \sim y = 1$
 $x = 0 \sim y = -2$
 $x = 1 \sim y = -3$

$R = (-\infty, 1]$



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$y = \frac{x^2 + 2x + m}{x+1} \leadsto y(x+1) = x^2 + 2x + m \leadsto x^2 + (2-y)x + m - y = 0$ $\Delta = (2-y)^2 - 4(m-y) \geq 0 \leadsto y^2 - 4y + 4 - 4m + 4y \geq 0 \leadsto y^2 - 4m \geq 0$ $\leadsto 16 - 4m \geq 0 \leadsto 16 \geq 4m \leadsto m \leq 4 \leadsto m \in \{1, 2, 3, 4\}$	f
$Q(x) = \begin{cases} x+2 & x \geq 2 \rightarrow x=2 \rightarrow y=0 \\ & \quad \quad \quad \rightarrow x=4 \rightarrow y=4 \\ x^2 - 2x + 2 & 1 \leq x < 2 \rightarrow \begin{array}{c ccc} x & 1 & 2 & 4 \\ y & 1 & 0 & 0 \end{array} \\ x + 2 & x < -1 \rightarrow \begin{array}{c cc} x & 0 & -1 \\ y & 2 & 1 \end{array} \end{cases}$  $IR = [1, +\infty)$	y
$f(x) = \begin{cases} x^2 + 2x + 2 & x \leq 0 \rightarrow IR = [-1, +\infty) \\ [x^2] - x & x > 0 \end{cases}$  $R = \{-\}$ $R_f = [-1, +\infty)$	A
$y = a+1 - \sqrt{x+2} \leadsto D_f = [b, +\infty) \leadsto R_y = (-\infty, 0] \Rightarrow a = 2$ $x+2 \geq 0 \leadsto x \geq -2 \leadsto b = -2, 0 \leadsto \sqrt{\square} = \square \leftarrow b = -2$ $\Rightarrow a \times b = -4$ $x \leadsto \hookrightarrow -\frac{x}{x}$	9
$f(x) = x\sqrt{x+1} + 2\sqrt{1-x} \rightarrow f(x) + g(x) = x\sqrt{x+1} + 2\sqrt{1-x} \rightarrow g(x) = \sqrt{x+1}$ $y = \frac{f(x)}{g(x)} = \frac{x\sqrt{x+1} + 2\sqrt{1-x}}{\sqrt{x+1}} = \sqrt{x+1} + \frac{2\sqrt{1-x}}{\sqrt{x+1}}$ $\rightarrow \frac{1}{x} f(x) = \sqrt{x+1} + \frac{2\sqrt{1-x}}{\sqrt{x+1}} = \frac{1}{x} \left[x\sqrt{x+1} + 2\sqrt{1-x} \right] = \sqrt{x+1} + \frac{2\sqrt{1-x}}{x}$ $y = \sqrt{x+1} + 2\sqrt{1-x} - \sqrt{x+1} \rightarrow -1 \leq x \leq 1 \rightarrow x = -1 \leadsto y = 2$ $x = 1 \leadsto y = 1$ $R = [-1, \sqrt{2}]$	1.