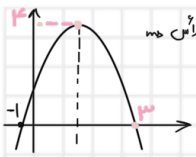


Note:

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$$m \cdot \frac{1}{3} = (1, 0)$$

$$y = 1 - 2f(x) \Rightarrow y = 1 - 2(1 - 2x) = 4x - 1$$

$$4x - 1 = 0 \Rightarrow x = \frac{1}{4}$$

$$A = (-\frac{1}{3}, -1) \Rightarrow AB = \frac{1}{3}$$

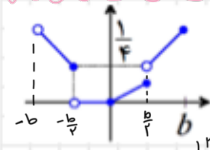
$$y = f(x-1) + g(x+1) \quad Dg = [-1, b], Df = (a, 2]$$

$$(a+1, \infty) \cap [-1, b-1] = (-1, \infty)$$

$$a+1 = -1 \Rightarrow a = -2$$

$$b-1 = \infty \Rightarrow b = 1$$

$$a-b = -2-1 = -3$$

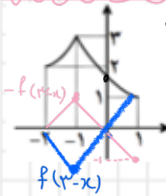


$$y = \frac{x}{a} [ax]$$

$$b-a = ?$$

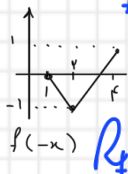
$$x = -\frac{b}{a} \Rightarrow \frac{-b}{\frac{1}{a}} = -ab = -1 \Rightarrow ab = 1$$

$$a = -2, b = 1$$

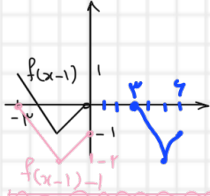


$$y = 1 - f(x-x)$$

$$D_f = [1, 2]$$

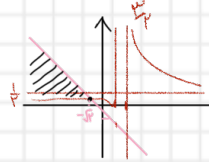


$$R_f = [-1, 1]$$



$$f(x) = \left| \frac{x+1}{x-1} \right| = \left| \frac{x-1}{x-1} \right| + 1 = g(x)$$

$$x + g(x) < 0 \Rightarrow g(x) < -x \Rightarrow \left| \frac{x-1}{x-1} \right| < -x-1$$



$$-x-1 = \frac{x-1}{x-1} \Rightarrow -x-1 = 1 \Rightarrow x = -2$$

$$x = \pm \sqrt{2}$$

$$(-2, -1)$$

$$d(2) =$$

$$g(x) = \sqrt{2 \ln f(x) - f(x)} = f(x) \ln f(x) \geq 0$$

$$-\phi + \phi = 0$$

$$Dg = [0, 1] \Rightarrow 0, 1, 2$$

$$0, 1, 2$$

$$0, 1, 2$$

$$(2)$$

$$y = -\frac{1}{x} (x-1)^2 + 3 \Rightarrow (x-1)^2 = 9$$

$$x-1 = 3 \Rightarrow x = 4$$

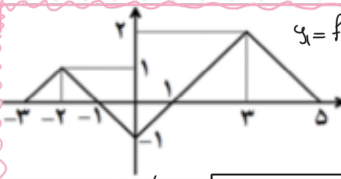
$$x-1 = -3 \Rightarrow x = -2$$

$$(3)$$

$$3 - \sqrt{2(x+1)} \rightarrow 3 - \sqrt{2(x+1)} + \infty = \frac{1}{x}$$

$$\sqrt{2(x+1)} = \frac{1}{x} - 3 = \frac{1-3x}{x}$$

$$2(x+1) = \frac{(1-3x)^2}{x^2} \Rightarrow 2x^2 + 2 = 1 - 6x + 9x^2 \Rightarrow 7x^2 - 6x - 1 = 0$$



$$f(x) = \begin{cases} x+1 & x \in [-1, 0] \\ -x & x \in [0, 1] \end{cases}$$

$$R_f = [-1, 1]$$

$$y = \sqrt{|f(x)|} - 1 \Rightarrow R_{y \circ f} = [-1, 1] \times [-1, 1] = [-1, 1]$$

$$[-1, 1] \times [-1, 1] = [-1, 1]$$

$$(4)$$

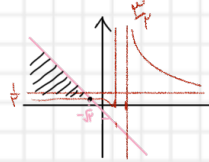
$$-\log_r(x+1) + 3 = g(x)$$

$$g(-1) = -\log_r(0) + 3 = -1$$

$$g(-4) = -\log_r(3) + 3 = -3$$

$$g(-1) + g(-4) = -4$$

$$(5)$$



$$-x-1 = \frac{x-1}{x-1} \Rightarrow -x-1 = 1 \Rightarrow x = -2$$

$$x = \pm \sqrt{2}$$

$$(-2, -1)$$

$$(6)$$

$$(10)$$