آنیتا زمانی ابری

۱۹٫۷۵

۱) (۴)

$2g = \{(-1,2), (0,8), (2,0), (1,4)\}$

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

$(1-x^2)$

$4g - 3f = \{(-1,2)(0,5)(1,4)\}$

$2 + 5 + 4 = 11$

۲) (۳)

$f(x) = 2x - 1 \quad D_f = [3, +\infty) \longrightarrow R_f = [5, +\infty)$ I

$g(x) = \frac{1}{3}x + 3 \quad D_g = (-\infty, 3] \longrightarrow R_g = (-\infty, 4]$ II

$I \cup II \longrightarrow (-\infty, 4] \cup [5, +\infty)$

۳) (۳)

$y = -\frac{x^2}{2} + x + 3$

$-\frac{x^2}{2} + x + 3 > \frac{3}{2}$

$-\frac{x^2}{2} + x + \frac{3}{2} > 0$

$-x^2 + 2x + 3 > 0$

$-(x+1)(x-3) > 0$

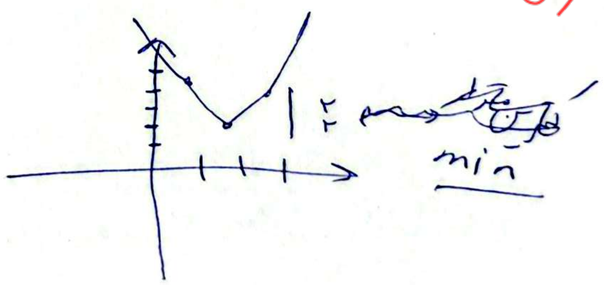
$D_f \rightarrow (-1, 3)$

$\sqrt{b-a} = \sqrt{4} = 2$

۴) (۳)

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

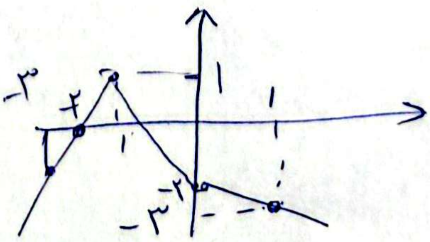
$-4x+8$	$-2x+6$	$2x-2$	$4x-8$



۲ min

۵) (۱٫۷۵)

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



$R = (-\infty, 1]$

$xy + y = x^2 + 5x + 1 \rightarrow x^2 + (5-y)x + (1-y) = 0$ (۴

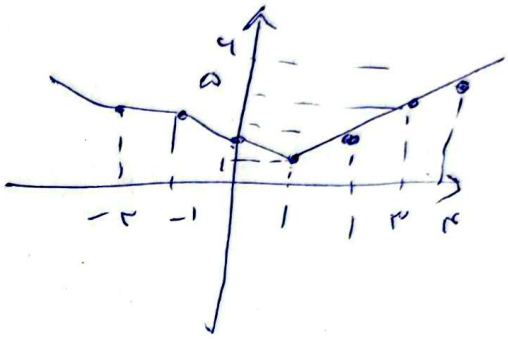
$\Delta \geq 0 \rightarrow (5-y)^2 - 4(1-y) \geq 0 \rightarrow 25 + y^2 - 10y - 4 + 4y \geq 0$ (۲)

$\rightarrow y^2 - 6y + 21 \geq 0 \rightarrow \Delta = 36 - 84 \leq 0 \rightarrow 4 \geq m$

$m = 4 \rightarrow \frac{x + 5x + 4}{x + 1} = x + 4 \rightarrow \frac{x + (-1)}{\text{تعریف نشده}} \rightarrow m = \{1, 2, 4\}$

(۷

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



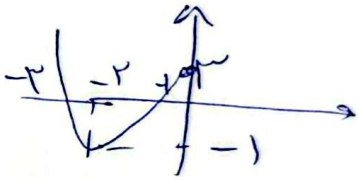
(۲)

$Rf = [1, +\infty)$

(۸

(۲)

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



$Rf = [-1, \infty)$

(۹

(۲)

$y = a + 1 - \sqrt{2x + 2}$ $\quad D = [b, +\infty)$ $\quad R = (-\infty, a]$

$2x + 2 \geq 0 \rightarrow 2x \geq -2 \rightarrow x \geq -1 = b$

$ab = -4$

if $b = -1 \rightarrow a = 0$

$f(x) = 2\sqrt{x+1} + 2\sqrt{1-x} - \sqrt{5x+5}$ (1.5)

(2)

$+ \sqrt{14+14x}$

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

$y = \dfrac{f(x) - 2g(x)}{4} \Rightarrow 4\sqrt{x+1} + 12\sqrt{1-x}$

$- 4\sqrt{12+12\sqrt{1-x^2}}$ $\qquad y = \sqrt{x+1} + 2\sqrt{1-x}$

$- \sqrt{2+2\sqrt{1-x^2}} \Rightarrow -1 \le x \le 1$

$x = -1 \quad y = \sqrt{2}$

$x = 1 \quad y = 0$

$x = 0 \quad y = 1$

$Rf = [0, 2\sqrt{2}]$