حل امتحان

۱- $f(x) = \sqrt{1-x^2} \geq 0 \quad -1 \leq x \leq 1$ $\qquad g = \{(-1,1), (0,4), (2,5), (1,2)\}$

$2g - 3f = ?$

$D_f \cap D_g = \{-1, 0, 1\}$

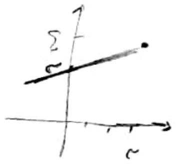
$2g = \{(-1,2), (0,8), (1,4)\}$

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

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

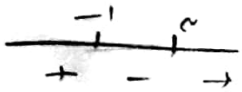
۲- $f(x) = 2x - 1 \qquad D_{f(x)} = [3, +\infty) \qquad g(x) = \frac{1}{2}x + 3 \qquad D_g = (-\infty, 2]$

$R_{g(x)} \cap R_{f(x)} = ? \ \emptyset$



۳- $y = -\frac{x^2}{2} + x + 3 \qquad R: (a,b) > \frac{3}{2} \qquad max: \sqrt{b-a}$

$-\frac{x^2}{2} + x + 3 > \frac{3}{2} \rightarrow -\frac{x^2}{2} + x + \frac{3}{2} > 0 \xrightarrow{\times(-2)} x^2 - 2x - 3 > 0 \quad (x-3)(x+1) \geq$

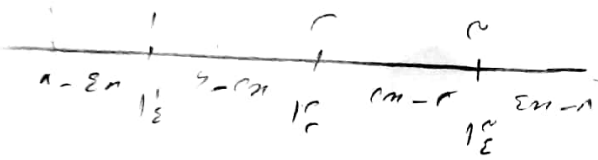


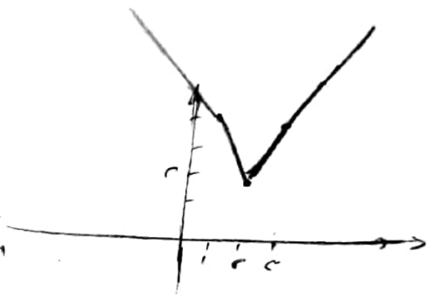
خلاصه جلسه [illegible]

min?

$y = |x-1| + |x-2| + |3x-4|$ ۴-

$\min y = 2$



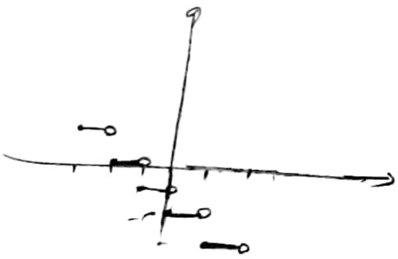


$y = |x| - 2|x+1| \longrightarrow y+1 = |x| - 2|x+1| + 1$ ۵-

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

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

$y = -|x| - 2$



حل مسائل تمرین

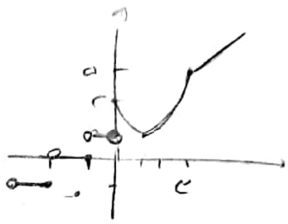
$= \frac{x^2+5x+m}{x+1}$ R

$\Delta \geq 0$

$x^2+5x+m \geq 0$

$25-4m \geq 0 \to 25 \geq 4m \to \frac{25}{4} \geq m$

$$f(x) = \begin{cases} x+2 & x \geq 3 \\ x^2-2x+2 = (x-1)^2+1 & 0 \leq x < 3 \\ \left[\frac{x}{4}\right] & x < 0 \end{cases}$$

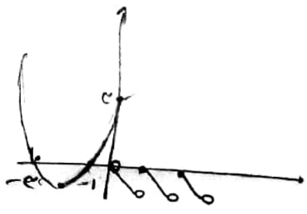


$?R$ -۷

$R_{f(x)} = [1, +\infty) \cup \{\dots, -1, 0\}$

$$f(x) = \begin{cases} x^2+4x+3 = (x+3)(x+1) & x \leq 0 \\ [2x]-2[x] & x > 0 \end{cases}$$

$0 \leq [2x]-2[x] \leq 1$



$?R$ -۸

$R_{f(x)} = [-1, +\infty)$

[illegible] — 9

$y \leq a+1-\sqrt{2x+3}$ $\quad D=[b,+\infty)$

$2x+3 \geq 0 \to x \geq -\frac{3}{2}$ $\quad R=(-\infty,a]$ $\quad ab=?$ $\quad a\cdot b = -\frac{3}{2}\times 4 = \boxed{-6}$

$b=-\frac{3}{2}$

$y = a+1 \longrightarrow a = \boxed{4}$

— 10

$f_{(x)} = 2\sqrt{x+1} + 4\sqrt{1-x}$ $\quad f_{(x)}+g_{(x)} = 3\sqrt{2+2\sqrt{1-x^2}}$

$D_f = D_g$ $\quad -1 \leq x \leq 1$ $\quad R = \frac{f_{(x)}}{6} - \frac{g_{(x)}}{3}$

$(1-x)(1+x)$

$\left(\left(\sqrt{1-x}\right)+\sqrt{1+x}\right)^2$

$f_{(x)}+g_{(x)} = 3\sqrt{1-x} + 3\sqrt{1+x}$ $\quad \left|\left(\sqrt{1-x}+\sqrt{1+x}\right|\right. \xrightarrow[=]{-1\leq x\leq 1} \sqrt{1-x}+\sqrt{1+x}$

$2\sqrt{x+1} + 4\sqrt{1-x} + g_{(x)} = 3\sqrt{1-x} + 3\sqrt{1+x}$

$g_{(x)} = \sqrt{1-x} - \sqrt{1+x}$ $\quad \to R = \frac{2\sqrt{x+1}+4\sqrt{1-x}}{6} = \frac{\sqrt{x+1}+2\sqrt{1-x}}{3} - \frac{\sqrt{1-x}+}{3}$

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

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