نام و نام خانوادگی ..آرمین [illegible]..... پاسخنامه تشریحی تکلیف شماره ...۸... کلاس یازدهم [illegible]......

۲۵

۱ (۲)

$y = \{(-1,1),(0,4),(2,0),(1,2)\}$, $f(x) = \sqrt{1-x^2}$ → $D_f = [-1,1]$

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

$f(-1)=0 \rightarrow 3f(-1)=0$

$f(1)=0 \rightarrow 3f(1)=0$

$f(0)=1 \rightarrow 3f(0)=3$

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

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

مجموع اعضای برد $= 2+5+4 = \boxed{11}$

۲ (۲)

$f(x) = 2x-1 \rightarrow D_f = [3,+\infty)$

$3 \le x$

$3 \le x \rightarrow 5 \le 2x-1 \rightarrow R_f = [5,+\infty)$

$g(x) = \frac{1}{3}x+3 \rightarrow D_g = (-\infty,3]$

$x \le 3$

$x \le 3 \rightarrow \frac{1}{3}x \le 1 \rightarrow \frac{1}{3}x+3 \le 4 \rightarrow R_g = (-\infty,4]$

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

۳ (۲)

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

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

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

$x^2 - 2x - 3 < 0$

$(x-3)(x+1) < 0$; $x = 3, -1$

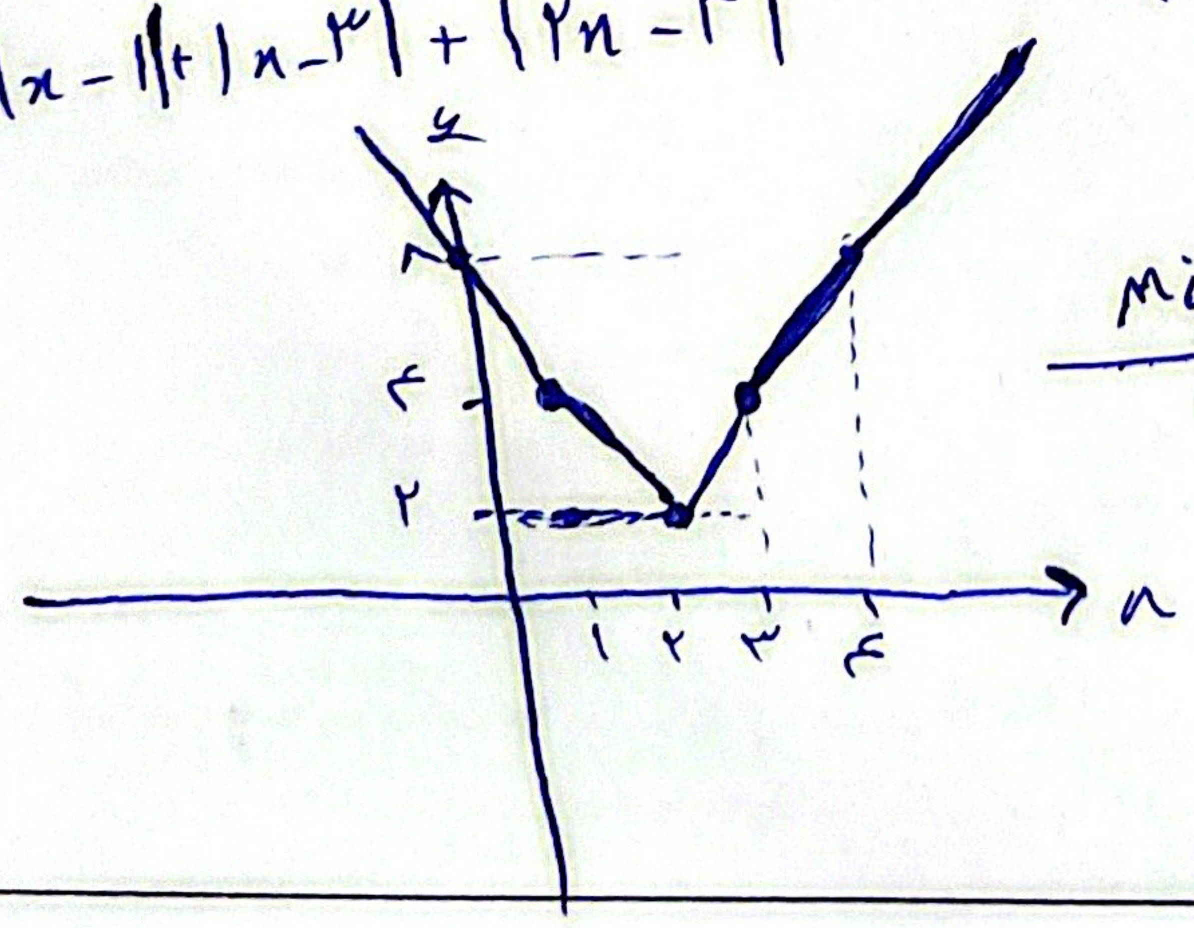
x		-1		3	
	$+$	0	$-$	0	$+$

$x \in (-1,3)$

$\sqrt{b-a}_{max} \xrightarrow{(b-a)_{max}} b=3,\ a=-1 \rightarrow \boxed{\sqrt{4} = 2}$

۴ (۲)

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

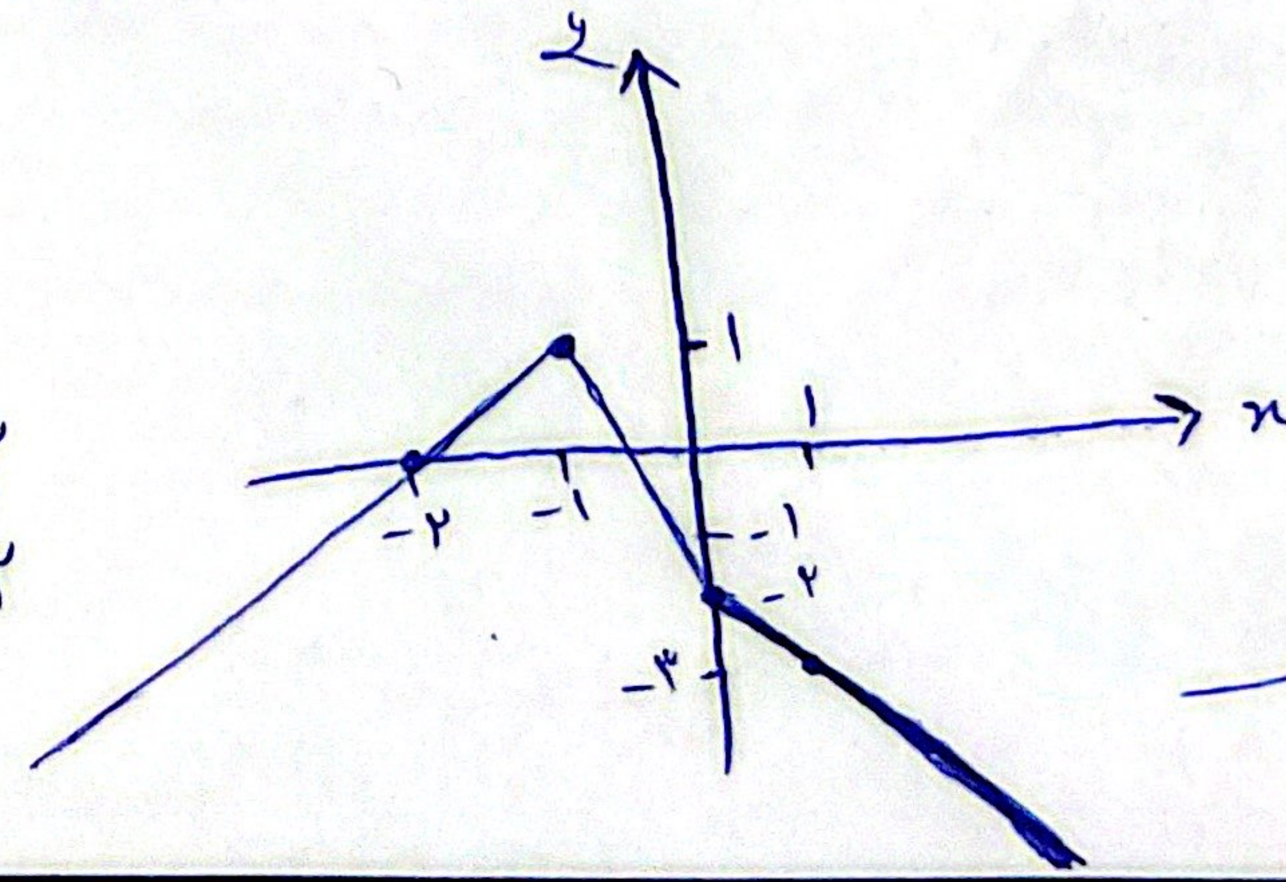


$\xrightarrow{min} 2 \rightarrow \boxed{f_{min} = 2}$

۵ (۲)

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

	-1		0	
$-x + 2x + 2$		$-x - 2x - 2$		$x - 2x - 2$
$x+2$		$-3x-2$		$-x-2$



$\rightarrow R_f = (-\infty, 1]$

$$f(x)=\begin{cases} x+2 & ; x\geq 3 \\ x^2-2x+2 = (x-1)^2+1 & ; 0\leq x<3 \\ |x|+2 & ; x<0 \end{cases}$$

$\longrightarrow x\geq 3 \longrightarrow x+2 \geq 5$ ①

$\longrightarrow 0\leq x<3 \longrightarrow -1\leq x-1<2 \longrightarrow 0\leq (x-1)^2<4 \longrightarrow 1\leq (x-1)^2+1<5$ ②

$\longrightarrow x<0 \longrightarrow |x|>0 \longrightarrow |x|+2>2$ ③

$1\cup 2\cup 3 \longrightarrow R_f =$

$R_f = [1,+\infty)$ ✓

۲ ۷#

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

$\longrightarrow x\leq 0 \longrightarrow x+2\leq 2 \longrightarrow (x+2)^2\geq 0 \longrightarrow (x+2)^2-1\geq -1$ ①

$[2x]-2x$

$2x=a \longrightarrow [a]-a \longrightarrow R = (-1,0]$ ②

$\xrightarrow{1\cup 2} R_f = [-1,+\infty)$ ✓

۲ ۸#

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

$2x+3\geq 0 \longrightarrow x\geq -\frac{3}{2}$

$D_f = [-\frac{3}{2},+\infty) \longrightarrow b = -\frac{3}{2}$ ✓

$ab = -6$ ✓

$R_f = (-\infty, a+1]$

$a+1=5 \longrightarrow a=4$ ✓

$\sqrt{2x+3}\geq 0 \longrightarrow -\sqrt{2x+3}\leq 0 \longrightarrow a+1-\sqrt{2x+3}\leq a+1$

۲ ۹#

$f(x) = 2\sqrt{x+1}+4\sqrt{1-x} \longrightarrow D_f = [-1,1]$

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

$y = \frac{f(x)}{6} - \frac{g(x)}{3}$

$y = \frac{f(x)}{6} - \sqrt{2+2\sqrt{1-x^2}} + \frac{f(x)}{3}$

$D = [-1,1]$

$\frac{f(x)}{2} - \sqrt{2+2\sqrt{1-x^2}} = \cancel{\sqrt{x+1}} + 2\sqrt{1-x} - \sqrt{\underbrace{2}_{1+x+1-x}+2\sqrt{1-x^2}}$

$\sqrt{x+1}=a$

$\sqrt{1-x}=b$

$a+b>0$

$a+2b-\sqrt{a^2+b^2+2ab} = b = \sqrt{1-x}$, $|a+b| = a+b$

$D=[-1,1]$ $\sqrt{[0,2]} \longrightarrow R = [0,\sqrt{2}]$

۲ ۱۰#

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

$yx+y = x^2+5x+m$

$x^2+(5-y)x+m-y=0$

شرط وجود $\Delta\geq 0 \longrightarrow (5-y)^2-4m+4y\geq 0$

$y^2-10y+25-4m+4y\geq 0 \longrightarrow y^2-6y+25-4m\geq 0$

$R_f=\mathbb{R} \Rightarrow \Delta\leq 0$, $a>0$ ✓ $\longrightarrow 36-100+16m\leq 0 \longrightarrow m\leq 4$

$m=4 \longrightarrow y = \frac{x^2+5x+4}{x+1} = x+4 \longrightarrow R_f = \mathbb{R}-\{3\}$

m نمی تواند ۴ باشد.

$\{m \mid m<4, m\in\mathbb{N}\} = \{1,2,3\}$ ✓

۲ ۶#