سانیا ماهدیان — قدر مطلق و براکت — یازدهم ر.خ ۸

۱- الف)

$\frac{1}{x-1} = x-1 \Rightarrow x^2+1-2x=1 \Rightarrow x=0, 2$ → $\boxed{2}$ ✓ ، 0 ✗

$\frac{1}{1-x} = x-1 \Rightarrow x-1-x^2+x=1 \Rightarrow x^2-2x+2 \Rightarrow \Delta=-4$ ✗

۲- ب)

$\frac{x-2}{2x+1} > 1 \Rightarrow 2x+1 > x-2 \Rightarrow x > -3$

$\frac{x-2}{2x+1} < -1 \Rightarrow x-2 < -2x-1 \Rightarrow 3x < 1 \Rightarrow x < \frac{1}{3}$

$\boxed{-3 < x < \frac{1}{3}}$

الف) $\frac{2x-1}{x} < 2 \Rightarrow 2x-1 < 2x$ ✗

$\frac{2x-1}{x} > -2 \Rightarrow 2x-1 > -2x \Rightarrow \boxed{x > \frac{1}{4}}$

۳)

$-x^2 > x+6 \Rightarrow 0 > x^2+x+6$ ✗

$x^2 < x+6 \Rightarrow x^2-x-6 < 0 \Rightarrow (x-3)(x+2) < 0$ ①

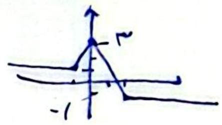
$x^2+x+6 < 0$، $\Delta = 1-24 < 0$

② $|x-\alpha| < \beta \Rightarrow -\beta < x-\alpha < \beta \xrightarrow{+\alpha} \alpha-\beta < x < \alpha+\beta$

① و ② $\Rightarrow \alpha-\beta=-2$ ، $\alpha+\beta=3$ $\Rightarrow 2\alpha=1 \Rightarrow \boxed{\alpha=\frac{1}{2}}$

۴)

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

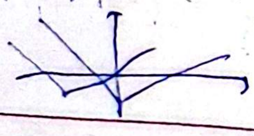


$3-1=\boxed{2}$

۵)

$y = |\frac{1}{2}x| - 2$

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



۶) الف)

	-4	1	
$1-x+x+4=5$	$1-x-x-4=-2x-3$	$x-1-x-4=-5$	

$-5 \le |1-x| - |x+4| \le 5$

$\Rightarrow [|1-x|-|x+4|] = \{-5, -4, \dots, 4, 5\}$

$\Rightarrow R_f = \{\pm5, \pm4, \pm3, \pm2, \pm1, 0\}$

ب) $\frac{1}{x} - [\frac{1}{x}] + 1 \Rightarrow 0 < t < 1 \Rightarrow 1 < t+1 < 2$

$R_f = (1, 2)$

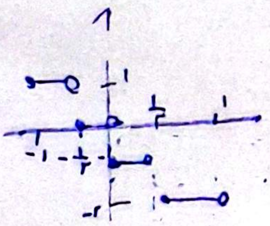
۷) الف)

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

$-\frac{1}{2} \le x < 0 \Rightarrow 0$

$0 \le x < \frac{1}{2} \Rightarrow -1$

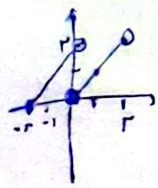
$\frac{1}{2} \le x < 1 \Rightarrow -2$



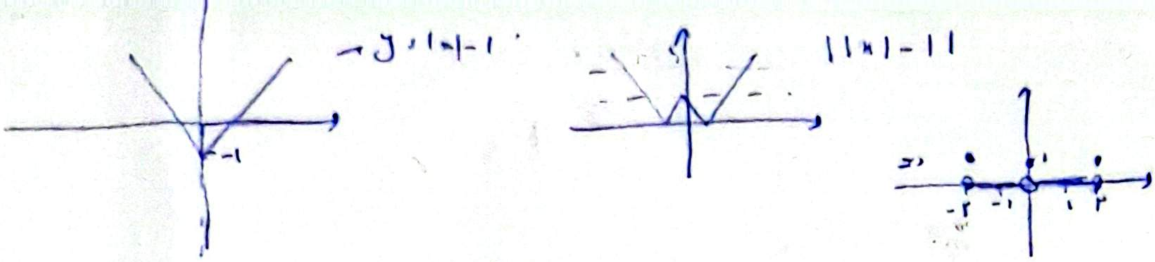
ب)

$-2 \le x < 0 \Rightarrow x+2$

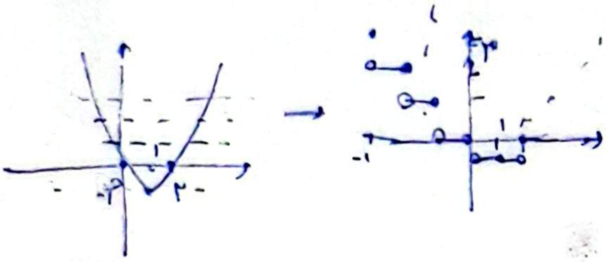
$0 \le x < 2 \Rightarrow x$



۸) الف



ب)



۹)

$b = y,۴$ و $a = x,۲$ ⇒ $a = ۱,۲$ ، $b = ۳,۴$

$m+0/2+n = 4/2 \rightarrow m+n=4$ ، $n=3$

$n+0/4-m = 2/4 \rightarrow n-m=2$ ، $m=1$

$[a]=m \Rightarrow a = m+0/2 \rightarrow a = 1/2$

$[b]=n \Rightarrow b = n+0/4 \rightarrow b = 3/4$

$a+b = 4/6$

۱۰)

$1-\sqrt{2} \simeq 1-1/41 = -0/41 \rightarrow -1 < 1-\sqrt{2} < 0 \rightarrow 0 < (1-\sqrt{2})^6 < 1$

عدد کسری به توان زوج بین ۰ و ۱ است

$\Rightarrow (1+\sqrt{2})^6 + (1-\sqrt{2})^6 = 198 \Rightarrow (1+\sqrt{2})^6 = 198 -$ عدد کسری

$\Rightarrow 198-1 < (1+\sqrt{2})^6 < 198-0 \Rightarrow 197 < (1+\sqrt{2})^6 < 198 \Rightarrow [(1+\sqrt{2})^6] = 197$