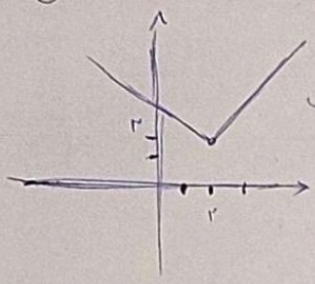
۱۹

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۷ کلاس یازدهم .....

۱ (۵)

الف) $y = x + |2x-4|$

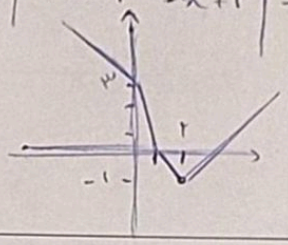
$x<2$	$x\geq 2$
$-x-2x+4$	$x+2x-4$
$-3x+4$	$3x-4$



ادامه)
$R_f = [2, +\infty)$

ب) $y = |x-2| + |x-1| - |x|$

$x<0$	$0\leq x<1$	$1\leq x<2$	$x\geq 2$
$-x+3$	$-3x+3$	$-x+1$	$x-2$



$R_f = [-1, +\infty)$

۲ (۵)

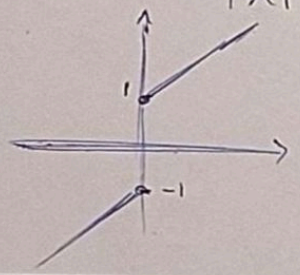
$|3x-3| - |x+2| = k$

$x<-2$	$-2\leq x<1$	$x\geq 1$
$-3x+3+x+2$	$-3x+3-x-2$	$3x-3-x-2$
$-2x+5$	$-4x+1$	$2x-5$
$x=\frac{k+5}{2}$	$x=\frac{1-k}{4}$	$x=\frac{5-k}{2}$
۱ ریشه	۲ ریشه	۲ ریشه
$k\geq -3$	$-3<k\leq 9$	$k>9$

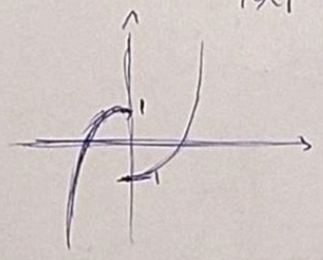
$\longrightarrow k=-3$

۳ (۵)

الف) $y = x + \frac{x}{|x|}$



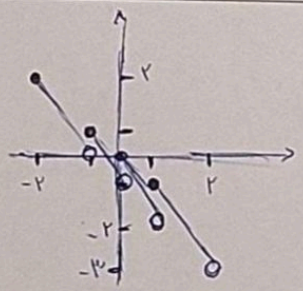
ب) $y = x|x| - \frac{x}{|x|}$



۴ (۵)

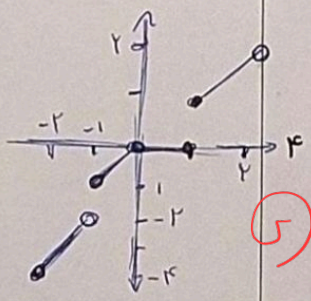
الف) $y = [x] - 2x$

$-2\leq x<-1 \quad [x]=-2$
$-1\leq x<0 \quad [x]=-1$
$0\leq x<1 \quad [x]=0$
$1\leq x<2 \quad [x]=1$
$2\leq x<3 \quad [x]=2$



ب) $y = [x]|x|$

$-2\leq x<-1 \rightarrow -2x, 2x$
$-1\leq x<0 \longrightarrow x, -x$
$0\leq x<1 \longrightarrow 0$
$1\leq x<2 \rightarrow x, -x$
$2\leq x<3 \rightarrow 2x, -2x$



۵ (۵)

الف) $y = 3x - [3x] \rightarrow [0, 1)$

ب) $y = 4x - 4[x] \rightarrow [0, 4)$

ج) $y = x - 5\left[\frac{x}{5}\right] \rightarrow [0, 5)$

د) $y = [2x] - 2x \rightarrow [0, -1)$

الف) $y = 3\sin\alpha + 2\cos\alpha$ $\sqrt{3^2+2^2} = \sqrt{13}$ $R_f = [\sqrt{13}, -\sqrt{13}]$

ب) $y = 2\sin\alpha - 3\cos\alpha$ $\sqrt{2^2+(-3)^2} = \sqrt{13} = 5$ $R_f = [5, -5]$

ج) $y = [3\sin\alpha + 5\cos\alpha]$ $\sqrt{3^2+5^2} = \sqrt{34} \simeq 6$ $R_f = [\pm 4, \pm 5, \pm 3, \pm 2, \pm 1, 0]$

د) $y = \sqrt{\cos\alpha - 2\sin\alpha}$ $\sqrt{1^2+(-2)^2} = \sqrt{5}$ $\Longrightarrow [\sqrt{5}, -\sqrt{5}] \to \sqrt{\square} \geq 0$

$R_f = [\sqrt{5}, 0]$ $[0, \sqrt{5}]$

۶ — 1,۷۵

الف) $y = \sin^2\alpha + 3\sin\alpha + 2 \longrightarrow \frac{-b}{2a} = \frac{-3}{2}$ $f(-\frac{3}{2}) = -\frac{1}{4}$ min

$\longrightarrow$ max $\longrightarrow$ $\sin\alpha = 1$ $y = 6$ $R_f = [-\frac{1}{4}, 6]$ غیرقابل قبول

$\sin\alpha = -1 \to 0$

۷ — 1,۵

ب) $y = 2\sin^2\alpha + 3\sin\alpha + 2 \longrightarrow \frac{-b}{2a} = \frac{-3}{4}$ $f(-\frac{3}{4}) = \frac{7}{8}$ min

$\longrightarrow$ max $\longrightarrow$ $\sin\alpha = 1$ $y = 7$ $R_f = [\frac{7}{8}, 7]$

۸ — ۲

الف) $y = \sin^2\alpha + 4\cos^2\alpha = \sin^2\alpha + 4(1+\sin^2\alpha) = 4 - \underbrace{3\sin^2\alpha}_{[-1,1]}$

$R_f = [1, 4]$

ب) $y = \frac{2\cot\alpha}{1+\cot^2\alpha} = \frac{2\cot\alpha}{\frac{1}{\sin^2\alpha}} = 2\cot\alpha \cdot \sin^2\alpha = 2\frac{\cos\alpha}{\sin\alpha} \cdot \sin^2\alpha \Rightarrow$

$2\cos\alpha\sin\alpha = \sin^2\alpha \longrightarrow R_f = [-1, 1]$

۹ — 1,۷۵

الف) $y = \sin^4\alpha + \cos^4\alpha$ $\frac{1}{2} \leq y \leq 1$ $R_f = [\frac{1}{4}, 1]$

ب) $y = [\sin^4\alpha + \cos^4\alpha]$ $\frac{1}{2} \leq y \leq 1$ $R_f = [0, 1]$

$\{0, 1\}$

۱۰ — ۲

الف) $y = \frac{2x^2+7x-4}{x+4} \longrightarrow \frac{(2x-1)(x+4)}{(x+4)} \longrightarrow y = 2x - 1$ $R - [9]$

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

min $\longrightarrow x = -\frac{1}{2}$ $y = \frac{3}{4}$ $R_f = [\frac{3}{4}, +\infty)$