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

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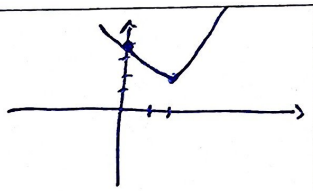
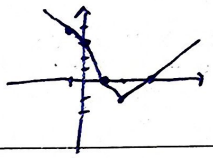
الف) $y = x + |2x - 4|$ ⟶

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



ب) $y = |x-2| + |x-1| - |x|$

$x = 3 \Rightarrow y = 0$
$x = 2 \Rightarrow y = -1$
$x = 1 \Rightarrow y = 0$
$x = 0 \Rightarrow y = 3$
$x = -1 \Rightarrow y = 4$



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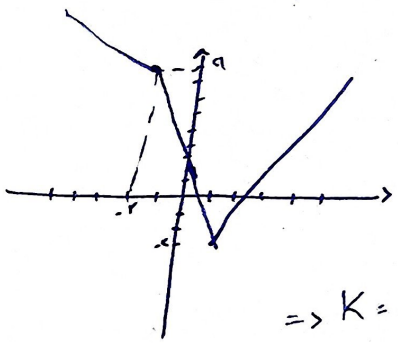
$|3x - 3| - |x + 2| = K$

$x < -2$	$-2 \leq x < 1$	$x \geq 1$
$-3x + 3 - x - 2$	$-3x + 3 - x - 2$	$3x - 3 - x - 2$
$-2x + 0$	$-4x + 1$	$2x - 5$
-9	-4	



$\Rightarrow K = -3$

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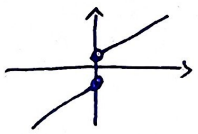
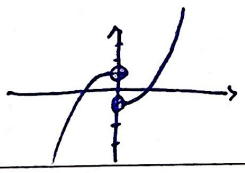
الف) $y = x + \frac{x}{|x|}$

$x < 0$	$x > 0$
$x - 1$	$x + 1$



ب) $y = x|x| - \frac{x}{|x|}$

$x < 0$	$x > 0$
$-x^2 + 1$	$x^2 - 1$



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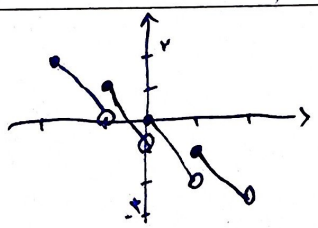
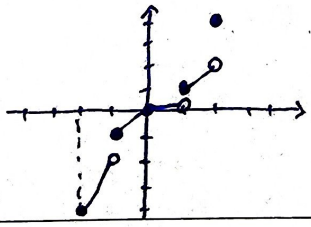
الف) $y = [x] - 2x$

$x = 2 \Rightarrow y = -2$



ب) $y = [x]|x|$

$x = 2 \Rightarrow y = 4$



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الف) $y = 3x - [3x] \overset{a=3x}{\Rightarrow} y = a - [a] \Rightarrow R_y = [0, 1)$

ب) $y = 4x - 4[x] \Rightarrow 4(x - [x]) \Rightarrow R_y = [0, 4)$

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

د) $y = [2x] - 2x \Rightarrow y = [a] - a \Rightarrow R_y = (-1, 0]$

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الف) $y = 3\sin x + 2\cos x$

$-\sqrt{13} \leq 3\sin x + 2\cos x \leq \sqrt{13}$ $\Rightarrow R_y = [-\sqrt{13}, \sqrt{13}]$ $\Longrightarrow -\sqrt{a^2+b^2} \leq a\sin x + b\cos x \leq \sqrt{a^2+b^2}$

ب) $y = 4\sin x - 3\cos x \Rightarrow -5 \leq 4\sin x - 3\cos x \leq 5 \Rightarrow R_y = [-5, 5]$

ج) $y = [2\sin x + 5\cos x] \Rightarrow -\sqrt{29} \leq 2\sin x + 5\cos x \leq \sqrt{29} \Rightarrow R_y = [-6, 5]$

د) $y = \sqrt{\cos x - 2\sin x} \Rightarrow -\sqrt{5} \leq \cos x - 2\sin x \leq \sqrt{5} \Rightarrow R_y = [0, \sqrt{5}]$

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الف) $y = \sin^2 x + 3\sin x + 2$

$\sin x = 1 \Rightarrow y = 6$

$\sin x = -1 \Rightarrow y = 0$ $\Rightarrow R_y = [0, 6]$

$\sin x = \frac{-b}{2a} = -\frac{3}{2}$ غ ق ق

ب) $y = 2\sin^2 x + 3\sin x + 2$

$\sin x = 1 \Rightarrow y = 7$

$\sin x = -1 \Rightarrow y = 1$ $\Rightarrow R_y = [\frac{7}{8}, 7]$

$\sin x = \frac{-b}{2a} = \frac{-3}{4} \Rightarrow y = \frac{7}{8}$

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الف) $y = \sin^2 x + 4\cos^2 x = 3\cos^2 x + 1$

$\cos^2 x = 1 \Rightarrow y = 4$

$\cos^2 x = 0 \Rightarrow y = 1$ $\Rightarrow R_y = [1, 4]$

ب) $y = \frac{4\cot x}{1+\cot^2 x} = \frac{2\cot x}{\frac{1}{\sin^2 x}} = \frac{2\frac{\cos x}{\sin x}}{\frac{1}{\sin^2 x}} = 2\cos x \sin x = \sin 2x$

$R_y = [-1, 1]$

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الف) $y = \sin^4 x + \cos^4 x \overset{[]}{\Longrightarrow} \frac{1}{2} \leq \sin^4 x + \cos^4 x \leq 1 \Rightarrow R_y = [\frac{1}{2}, 1]$

ب) $y = [\sin^8 x + \cos^8 x] \Rightarrow \frac{1}{8} \leq \sin^8 x + \cos^8 x \leq 1 \Rightarrow R_y = \{0, 1\}$

اعمال برابری

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الف) $y = \frac{2x^2 + 7x - 4}{x+4} = \frac{(x+4)(2x-1)}{x+4} = 2x - 1$

$D_y = R - \{-4\} \Rightarrow R_y = R - \{-9\}$

$2(-4) - 1 = -9$

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

$\frac{-b}{2a} = -\frac{1}{2}$ $\quad y_{min} = \frac{3}{4}$ $\quad R_y = [\frac{3}{4}, +\infty)$