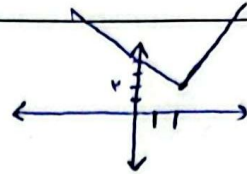


۱۴، ۷۵

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

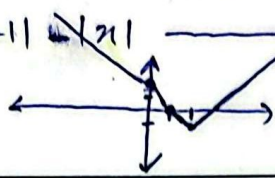
الف) $y = x + |2x - 4| \rightarrow \frac{x^2}{-x+4} \frac{3x-4}{-x+4}$

$Ry = [2 + \infty)$ ✓



(۲)

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



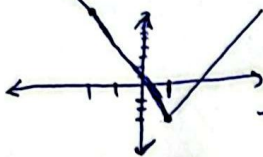
$Ry = [-1 + \infty)$ ✓

۱

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

یک ریشه

$\rightarrow \frac{x^2}{-2x+5} \frac{-4x+1}{-2x+5} \frac{2x-5}{-2x+5}$



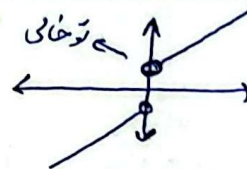
مقطار $x = 1$
یک جواب داریم

$k = -3$ ✓

(۲)

۲

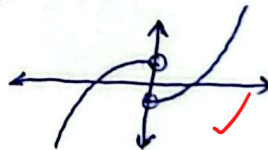
الف) $y = x + \frac{x}{|x|} \rightarrow \begin{cases} x+1 & x > 0 \\ x-1 & x < 0 \end{cases}$



(۲)

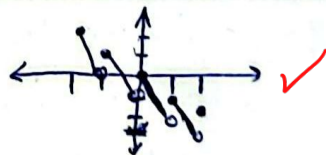
۳

ب) $y = x|x| - \frac{x}{|x|} \rightarrow \begin{cases} x^2-1 & x > 0 \\ -x^2+1 & x < 0 \end{cases}$



الف) $y = [x] - 2x$

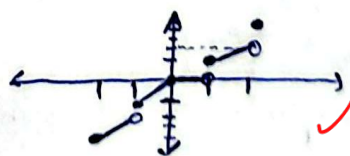
باید حتماً بعد از بنویس



(۱)

۴

ب) $y = [x]|x|$



الف) $y = 3x - [3x]$

$Ry = [0, 1)$ ✓

ب) $y = 4x - 4[x]$

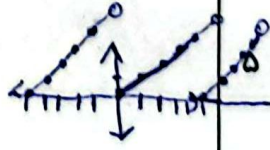
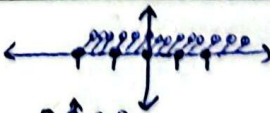
$Ry = [0, 4)$ ✓

ج) $y = x - 5[\frac{x}{5}]$

$Ry = [0, 5)$ ✓

د) $y = [2x] - 2x$

$Ry = (-1, 0]$ ✓



(۲)

$$-\sqrt{a^2+b^2} \leq a \sin x + b \cos x \leq \sqrt{a^2+b^2}$$

الف) $y = 3 \sin x + 4 \cos x \rightarrow -\sqrt{13} \leq 3 \sin x + 4 \cos x \leq \sqrt{13}$ ✓

ب) $y = 5 \sin x - 3 \cos x \rightarrow \begin{matrix} \text{max: } \sin x = 1 \\ \text{min: } \cos x = 1 \end{matrix} \rightarrow Ry = [-\sqrt{34}, \sqrt{34}]$ ✓

ج) $y = [2 \sin x + 4 \cos x] \rightarrow -\sqrt{20} \leq 2 \sin x + 4 \cos x \leq \sqrt{20}$
 $\rightarrow -4 \leq [2 \sin x + 4 \cos x] \leq 4$ ✓

د) $y = \sqrt{\cos x - 2 \sin x} \rightarrow \begin{matrix} \text{max: } \cos x = 1 \\ \text{min: } \cos x = 2 \sin x \end{matrix} \rightarrow Ry = [0, \sqrt{5}]$ ✓

الف) $y = \sin^2 x + 3 \sin x + 2$ $\rightarrow \frac{-3 \pm \sqrt{9-4}}{2} \rightarrow -1$ ✓

$Ry = [0, 4]$ ✓

ب) $y = 2 \sin^2 x + 3 \sin x + 2$
 $-\frac{b}{2a} = -\frac{3}{4} \rightarrow \frac{9-14}{4} = -\frac{5}{4} \rightarrow \frac{5}{4}$
 $\rightarrow Ry = [\frac{5}{4}, 7]$ ✓

الف) $y = \sin^2 x + 4 \cos^2 x = 1 + 3 \cos^2 x \rightarrow \begin{matrix} \text{min: } \cos x = 0 \\ \text{max: } \cos x = \pm 1 \end{matrix}$
 $\rightarrow Ry = [1, 4]$ ✓

ب) $y = \frac{2 \cot x}{1 + \cot^2 x} = \frac{2 \frac{\cos x}{\sin x}}{1 + \frac{\cos^2 x}{\sin^2 x}} = 2 \sin x \cos x = \sin 2x$
 $\rightarrow Ry = [-1, 1]$ ✓

الف) $y = \sin^4 x + \cos^4 x = (\sin^2 x)^2 + (\cos^2 x)^2 = (\cos^2 x + \sin^2 x)^2 - 2 \sin^2 x \cos^2 x$
 $\rightarrow \sin^2 x \cos^2 x = (\sin x \cos x)^2 = (\frac{1}{2} \sin 2x)^2 = \frac{1}{4} \sin^2 2x \rightarrow \begin{matrix} \text{min} = 0 \\ \text{max} = \frac{1}{4} \end{matrix}$
 $\rightarrow 1 - \frac{1}{2} \sin^2 2x \rightarrow \begin{matrix} \text{min} = 1 - \frac{1}{2} = \frac{1}{2} \\ \text{max} = 1 \end{matrix} \rightarrow Ry = [\frac{1}{2}, 1]$ ✓

ب) $[\sin^4 x + \cos^4 x] = (\sin^2 x + \cos^2 x)^2 - 2 \sin^2 x \cos^2 x = 1 - 2 \sin^2 x \cos^2 x$
 $\rightarrow \sin^2 x \cos^2 x = \frac{1}{4} \sin^2 2x$

الف) $y = \frac{x^2 + 4x - 5}{x + 1} \rightarrow \frac{x^2 + 4x - 5}{x + 1} = x + 3 - \frac{8}{x + 1}$
 $\rightarrow y^2 + 14y + 11 \geq 0$

$\rightarrow (y+9)^2 \geq 0 \rightarrow y \geq -9$
 $D = 14 - (-9) = 23 \rightarrow R = [14 - 23, 14 + 23]$

ب) $y = \frac{x^2 - 1}{x - 1} = \frac{(x-1)(x+1)}{x-1} = x + 1$
 $\rightarrow \text{if } x = 1 \rightarrow 1 + 1 = 2$
 $\rightarrow Ry = [2, +\infty)$ ✓

الف) $y = (1 - \frac{1}{2} \sin^2 2x)^2 = 1 - \sin^2 2x + \frac{1}{4} \sin^4 2x$
 $\rightarrow 1 - \sin^2 2x + \frac{1}{4} \sin^4 2x \rightarrow \frac{1}{4} t^4 - t^2 + 1$
 $\rightarrow \text{min: } \frac{1}{4} \text{ max: } 1 \rightarrow Ry = [\frac{1}{4}, 1]$ ✓