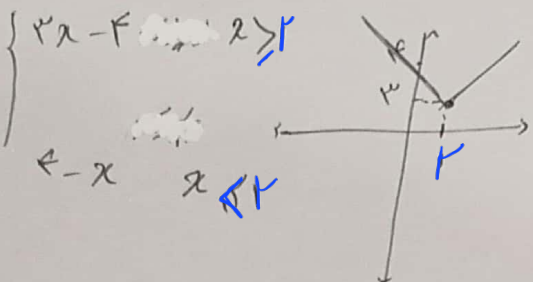


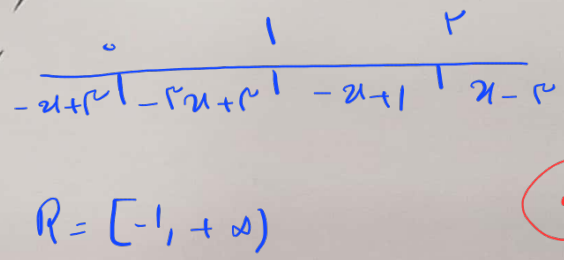
4,5

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس
 نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس

الف) $y = x + |2x - 4|$



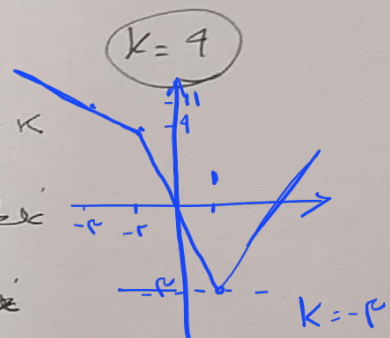
$y = |x - 2| + |x - 1| - |2x|$



0

$|2x - 3| - |x - 1| = k$

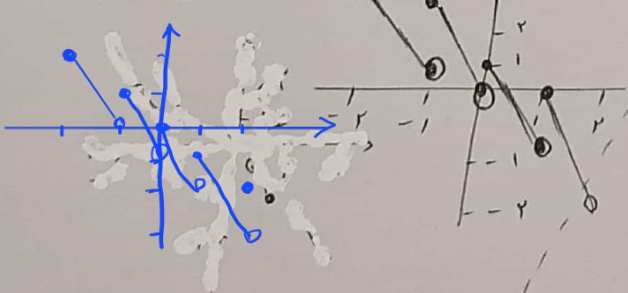
$x_1 = x_2 = \emptyset \rightarrow y = k$
 $2x - 3 = 0 \rightarrow x = 1.5$
 $x - 1 = 0 \rightarrow x = 1$
 $x - 1 = 0 \rightarrow x = 1$
 $x - 1 = 0 \rightarrow x = 1$



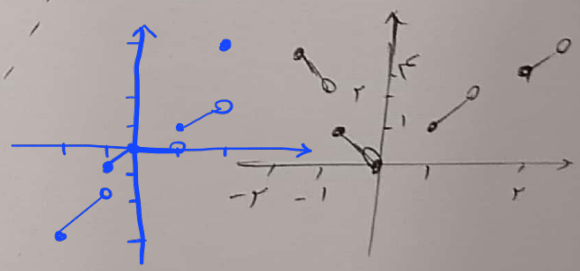
1

الف) $y = x + \frac{x}{|x|}$

الف) $y = [x] - 2x$



ب) $[x] |x|$



0

الف) $y = 4x - [4x] \rightarrow y = 4x - |4x|$ $R_f = [0, 1)$

ب) $y = 4x - 4[x] \rightarrow y = 4(x - [x])$ $R_f = [0, 4)$

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

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

1, 1/2

$$f(x) = \sqrt{x} \sin x + \sqrt{x} \cos x \Rightarrow R_f = [-\sqrt{2}, \sqrt{2}]$$

$$f(x) = \sqrt{x} \sin x - \sqrt{x} \cos x \rightarrow R_f = [-\sqrt{2}, \sqrt{2}] \quad [-2, 2]$$

$$-\sqrt{x} \sin x + \sqrt{x} \cos x \Rightarrow R_f = [-\sqrt{2}, \sqrt{2}]$$

$$f(x) = [\sqrt{x} \sin x + 0 \cos x] \Rightarrow -\sqrt{x} \sin x + 0 \cos x \Rightarrow R_f = [-\sqrt{2}, \sqrt{2}]$$

$$g(x) = \sqrt{\cos x - x \sin x} \Rightarrow -\sqrt{x} \sin x + \cos x \Rightarrow R_f = [-1, 1]$$

$$f(x) \rightarrow \text{ACQ}$$

$$y = \frac{\sqrt{x} \cot x}{1 + \cot x} = \frac{\frac{\sqrt{x} \cos x}{\sin x}}{\frac{1}{\sin^2 x}} = \sqrt{x} \cos x \times \sin x$$

$$y = \cos x \times x$$

$$R_f = [-1, 1]$$

$$y = \sin^2 x + \sqrt{x} \sin x + \sqrt{x}$$

$$\frac{-\sqrt{x}}{\sqrt{x}} = -\frac{1}{\sqrt{x}} \cdot f(-\frac{1}{\sqrt{x}}) = -\frac{1}{\sqrt{x}}$$

$$\sin x = 1 \rightarrow y = 2$$

$$\sin x = -1 \rightarrow y = 0$$

$$R_f = [-\frac{1}{\sqrt{x}}, 2]$$

$$f(x) = y = \sin^2 x + \sqrt{x} \cos^2 x = 1 + \sqrt{x} \cos^2 x$$

$$-1 \sqrt{x} \sin^2 x + \sqrt{x} \cos^2 x \Rightarrow 1 + \sqrt{x}$$

$$R_f = [-1, 1]$$

$$R = [1, \sqrt{x}]$$

$$y = \sqrt{x} \sin^2 x + \sqrt{x} \sin x + \sqrt{x}$$

$$\frac{-\sqrt{x}}{\sqrt{x}} = -\frac{1}{\sqrt{x}} \quad f(-\frac{1}{\sqrt{x}}) = +\frac{1}{\sqrt{x}}$$

$$\sin x = 1 \rightarrow y = \sqrt{x}$$

$$\sin x = -1 \rightarrow y = 1$$

$$R_f = [\frac{1}{\sqrt{x}}, \sqrt{x}]$$

$$f(x) = y = \sin^4 x + \cos^4 x$$

$$\frac{1}{\sqrt{x}} \sqrt{\sin^4 x + \cos^4 x} \Rightarrow 1$$

$$R_f = [\frac{1}{\sqrt{x}}, 1]$$

$$y = [\sin^4 x + \cos^4 x]$$

$$\frac{1}{\sqrt{x}} \sqrt{\sin^4 x + \cos^4 x} \Rightarrow 1$$

$$[\sin^4 x + \cos^4 x] = \begin{cases} 0 \\ 1 \end{cases} \Rightarrow R_f = \{0, 1\}$$

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

$$\sqrt{x^2 + \sqrt{x} - x} = \sqrt{x} + \sqrt{x}$$

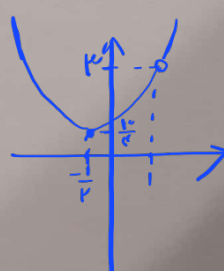
$$\sqrt{x^2 + (\sqrt{x} - x)} - \sqrt{x} - \sqrt{x} = 0$$

$$\Delta \geq 0 \rightarrow y^2 + 11y + 11 \geq 0$$

$$\frac{-1}{-6} \rightarrow (y+4)^2$$

$$R_f = [-4, +\infty)$$

$$R = \mathbb{R} \setminus \{9\}$$



$$R = [\frac{1}{\sqrt{x}}, +\infty)$$

$$[-1, 0]$$