

۱۹/۲۵

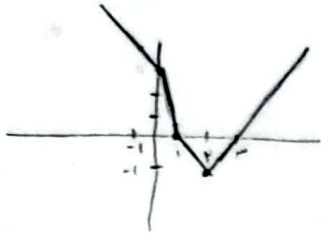
نام و نام خانوادگی علی جباری پاسخنامه تشریحی تکلیف شماره کلاس پایه دهم A

الف) $f(x) = \begin{cases} x + 2x - 4 = 3x - 4 & x \geq 2 \\ x - 2x + 4 = -x + 4 & x \leq 2 \end{cases}$



$R_f = [2, +\infty)$

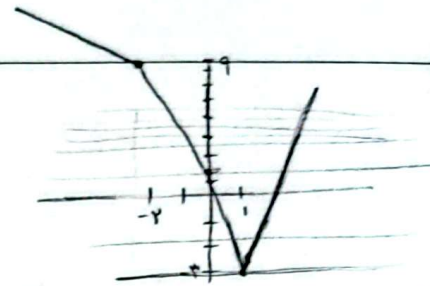
ب)



$f(1) = 4$
 $f(0) = 3$
 $f(1) = 0$
 $f(0) = -1$
 $f(0) = 0$

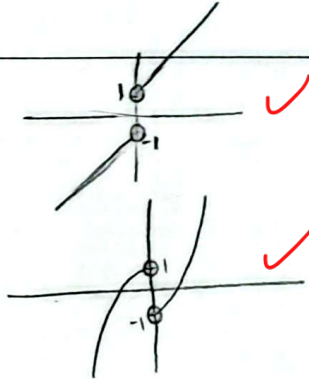
$R_f = [-1, +\infty)$

$x \leq -2$ $-2 < x \leq 1$ $x \geq 1$
 $-(3x-4) - (-(x+1)) = -2x+5$ $-(1x-2) - (x+1) = -2x+1$ $(3x-4) - (x+1) = 2x-5$



تقاطع نمودار نسبت به خط عمود باشد با نمودار $y = K$ باید دو مقدار باشد پس $K = -3$ ✓
اگر $K > -3 \Rightarrow 2$ تقاطع
اگر $K < -3 \Rightarrow 0$ تقاطع

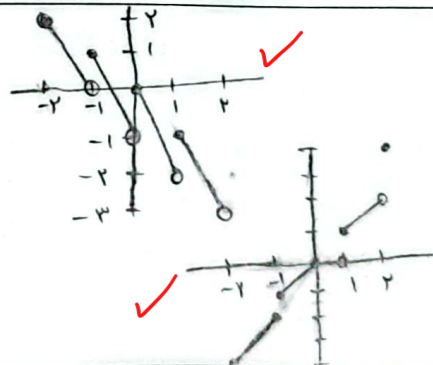
الف) $f(x) = \begin{cases} x + \frac{x}{x} = x+1 & x > 0 \\ x + \frac{x}{-x} = x-1 & x < 0 \end{cases}$



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

الف) $f(x) = \begin{cases} -2x+2 \\ -2x+1 \\ -2x \\ -2x-1 \\ -2x-2 \end{cases}$

$x=2 \Rightarrow [x]=2$
 $x \in [1, 2) \Rightarrow [x]=1$
 $x \in [0, 1) \Rightarrow [x]=0$
 $x \in [-1, 0) \Rightarrow [x]=-1$
 $x \in [-2, -1) \Rightarrow [x]=-2$



$[x] \cdot |x| = \begin{cases} 2x \\ x \\ 0 \\ x \\ 2x \end{cases}$

$x=2 \Rightarrow [x]=2$ $|x|=x$
 $x \in [1, 2) \Rightarrow [x]=1$ $|x|=x$
 $x \in [0, 1) \Rightarrow [x]=0$ $|x|=x$
 $x \in [-1, 0) \Rightarrow [x]=-1$ $|x|=-x$
 $x \in [-2, -1) \Rightarrow [x]=-2$ $|x|=-x$

الف) $3x=y \Rightarrow f(x)=y-[y] = \dots \Rightarrow R_f \in [0, 1)$ ✓

ب) $f(x) \leq f(x - [x]) < f(1) \Rightarrow R_f = [0, 1)$ ✓

ج) $\omega(\frac{x}{\omega}) - \omega[\frac{x}{\omega}] = \omega(\frac{x}{\omega} - [\frac{x}{\omega}]) \Rightarrow \omega(y - [y]) \Rightarrow R_f = [0, \omega)$ ✓

د) $4x=y \Rightarrow f(x) = [y] - y \Rightarrow R_f = (-1, 0]$ ✓

الف) $-\sqrt{13+1} \leq 3\sin x + 4\cos x \leq \sqrt{13+1} \Rightarrow R_f = [-\sqrt{14}, \sqrt{14}]$ ✓ ب) $-\sqrt{4^2+1^2} \leq 4\sin x - 1\cos x \leq \sqrt{4^2+1^2} \Rightarrow R_f = [-5, 5]$ ✓ ج) $-\sqrt{4^2+0^2} \leq 4\sin x + 0\cos x \leq \sqrt{4^2+0^2} \Rightarrow R_f = \{-4, -2, -1, \dots, 4\}$ ✓ $-4 \leq -\sqrt{16} \leq 4 \leq \sqrt{16} \leq 4 \Rightarrow -4 \leq [4\sin x + 0\cos x] \leq 4 \leq \mathbb{Z}$ د) $-\sqrt{0^2+1^2} \leq \cos x - 1\sin x \leq \sqrt{0^2+1^2} = 1$ $\Rightarrow 0 \leq \sqrt{\cos^2 x - 4\sin^2 x} \leq \sqrt{0} \Rightarrow R_f = [0, \sqrt{0}]$ ✓	(2)
الف) $\rightarrow x_v = \frac{-b}{2a} = \frac{-4}{4} = -1$ $\sin x = t$ $f(t) = t^2 + 4t + 1$ $f(-1) = 0$ $f(1) = 4$ $t \in [-1, 1]$ ب) $\rightarrow x_v = \frac{-b}{2a} = \frac{-4}{4} = -1$ $\sin x = t$ $4t^2 + 4t + 1$ $f(-1) = 1$ $f(1) = 4$ $t \in [-1, 1]$ $\Rightarrow R_f = [0, 4]$ ✓ $\Rightarrow R_f = [\frac{1}{4}, 4]$ ✓	(2)
الف) $\sin^2 x + \cos^2 x + 3\cos^2 x = 1 + 3\cos^2 x \Rightarrow 1 \leq \cos^2 x \leq 1 \Rightarrow 0 \leq \cos^2 x \leq 1$ $1 = 1 + 3(0) \leq 1 + 3\cos^2 x \leq 1 + 3(1) = 4 \Rightarrow R_f = [1, 4]$ ✓ ب) $\frac{4\cot x}{1+\cot^2 x} = \frac{4\cot x}{\frac{1}{\sin^2 x}} = 4 \times \frac{\cos x}{\sin x} \times \sin^2 x = 4 \sin x \cos x = \sin 2x$ $-1 \leq \sin 2x \leq 1 \Rightarrow R_f = [-1, 1]$ ✓	(2)
الف) $\star 1 \leq \sin^2 x + \cos^2 x \leq 1$ $\star \Rightarrow 1 \leq \sin^2 x + \cos^2 x \leq 1 \Rightarrow R_f = [1, 1]$ ✓ ب) $\star \Rightarrow 1 \leq \sin^2 x + \cos^2 x \leq 1 \Rightarrow R_f = \{0, 1\}$ ✓	(2)
الف) $4x^2 + 4x - 4 = (x+1)(4x-1)$ $\frac{(x+1)(4x-1)}{x+1} = 4x-1$ $x \neq -1$ $4x-1 = 0 \Rightarrow x = \frac{1}{4}$ $\Rightarrow R_f = \{1, \frac{1}{4}\}$ ✓ ب) $\frac{x^2-1}{x+1} = x-1$ $x \neq -1$ $x-1 = 0 \Rightarrow x = 1$ $\Rightarrow R_f = [1, \infty)$ ✓	(1, 2)

چون سمجھتی ہے $f_{x-1} = 3$ پس f_{x-1} حذف کیجئے!