$y = x + |2x - 4|$

x	$-\infty$		2		$+\infty$
$2x-4$		$-$	0	$+$	

$(2, +\infty) \cup (-\infty, 2) \Rightarrow R_f = [2, +\infty)$ ✓ (۲)

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

x	$-\infty$		0		1		2		$+\infty$
$2-x$		$+$	2	$+$	1	$+$	0	$-$	
$1-x$		$+$	1	$+$	0	$-$		$-$	
x		$-$	0	$+$		$+$		$+$	

$= [2, +\infty) \cup [0, 2] \cup [-1, 0] \cup (-\infty, -1)$

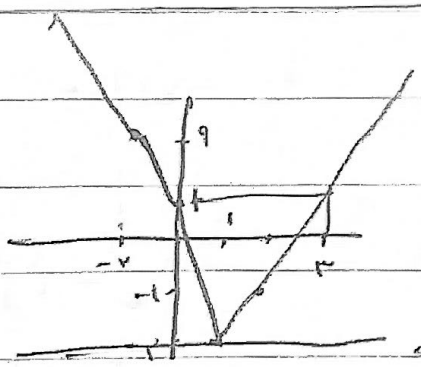
$R_f = [-1, +\infty)$ ✓

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

$y_1 = |3x-3| - |x+2|$

$y_2 = k$

نمودار دو ضابطه در یک دستگاه مختصات رسم می‌کنیم. (۲)

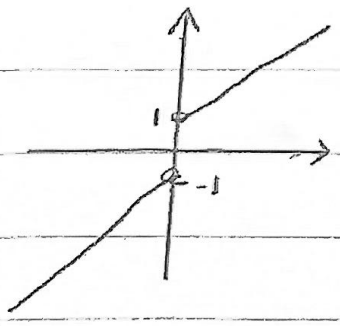


$y_2 = K \in (K < -3)$ ✓

$y = x + \frac{x}{|x|}$

x	$-\infty$		0		$+\infty$
$x + \frac{x}{x}$	$x - 1$		$x + 1$		

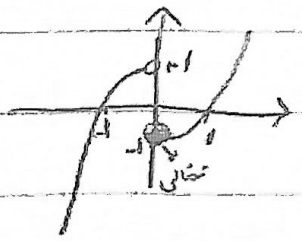
نمودار (۲)



$y = x|x| - \frac{x}{|x|}$

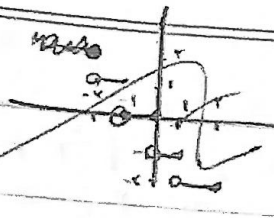
x	$-\infty$		0		$+\infty$
$-x^2+1$		$+$	0	$-$	
x^2-1		$-$	0	$+$	

نمودار

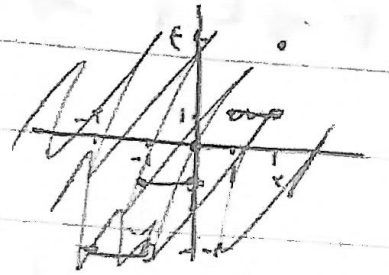


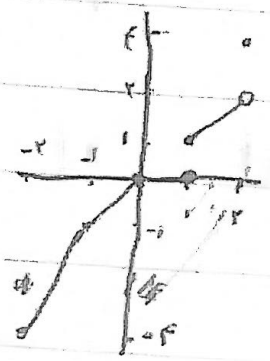
سوال ۴ آخر جواب ها

$y = [x] - 2x$



$y = [x] |x|$





$y = x^2 - [x^2]$ $\quad R_f = [0 \quad 1)$ ✓ $\quad$ (۲) - د

$y = fx - f[x] =$ $\quad f(x - [x]) \Rightarrow R_f = [0 \quad f)$ ✓

$y = x - 3\left[\frac{x}{3}\right]$ $\quad 3\left(\frac{x}{3} - \left[\frac{x}{3}\right]\right)$ $\quad R_f = [0 \quad 3]$ ✓

$[0 \quad 1)$

$y = [2x] - 2x =$ $\quad R_f = (-1 \quad 0]$ ✓

$[a] \to a \Rightarrow -1 < [a] - a \leq 0$

$y = 2\sin x + 2\cos x$ $\quad \sqrt{9+4} \Rightarrow [-\sqrt{13} \quad \sqrt{13}]$ ✓ $\quad$ ب

(۲)

$y = 4\sin x - 3\cos x$ $\quad \sqrt{16+9}$ $\quad = [-5 \quad 5]$ ✓

$y = [2\sin x + 3\cos x]$ $\quad \sqrt{4+9}$ $\quad R_f = \{-3, -2, -1, 0, 1, 2, 3\}$

$[-\sqrt{13} \quad \sqrt{13})$ ✓

$y = \sqrt{\cos x - 2\sin x}$ $\quad \sqrt{\text{max}}$

$-\sqrt{5} \leq \sqrt{\cos x - 2\sin x} \leq \sqrt{5}$

$R_f = [0 \quad \sqrt{5}]$ ✓

Scbd

$\sin^2 x - 2\sin x - 2$

$\frac{-b}{2a} = \frac{-2}{2}$ GÖÇ

$\sin x = 1$

$\sin x = 0$

$\frac{9}{8} + \frac{9}{4} + 2$

$-\frac{9}{8} + \frac{12}{8} = \frac{3}{8}$

$\frac{-b}{2a} = \frac{-2}{4} = -\frac{2}{4} \to \frac{1}{8}$

$\sin x = 1 \quad = \checkmark$

$\sin x = -1 < 1$

(2) - 7

$Rf = [0 \quad 4]$ ✓

$Rf = [0 \quad 4]$ ✓

$Rf = \left[\frac{1}{8} \quad 1\right]$ ✓

$y = \sin^2 x + 2\cos^2 x \Rightarrow \sin^2 x - 2\sin^2 + 2$

$-2\sin^2 + 2$

$[0 \quad 1]$

< 1

(2) - 8

$Rf = [1 \quad 2]$ ✓

$\frac{b}{2a}$

$\sin x = 1$

$\sin x = -1 < 1$

$g = \frac{2\cot x}{1 + 2\cot^2 x} = \frac{2\frac{\cos}{\sin}}{\frac{1}{\sin^2}} = 2\cos\sin = \sin 2a$

$[-1 \quad 1]$ ✓

$y = \sin^4 x - \cos^4 x$

$2^{1-2} = 2^{-1} = \frac{1}{2}$

(2) - 9

$[\frac{1}{2} \quad 1]$ ✓

$y = [\sin^2 x \quad 2\cos^2 x]$

$\{0, 1\}$ ✓

2^{1-0}

$[\frac{1}{8} \quad 1]$

۱. (۲)

$\frac{۲x^۲+۷x-۴}{x+۴}$ $\quad \frac{-۷\pm\sqrt{۴۹+۳۲}}{۴}$ $\quad \frac{۱}{۲}$, -۴

$x\neq -۴$ $\quad \frac{(x+۴)(x-\frac{۱}{۲})}{(x+۴)} = x-\frac{۱}{۲}$ $\quad ۲x-۱$

$۲x-۱=-۹$ $\quad R-\{-۹\}$ ✓

$y=\frac{x^۳-۱}{x-۱} = \frac{(x-۱)(x^۲+x+۱)}{(x-۱)} = x^۲+x+۱$

$x\neq ۱$ $\rightarrow f(۱)=f(-۲)$ ، ۳ همیشه واسه همین ۳ حذف

$\frac{-b}{۲a}=\frac{-۱}{۲}$ $\quad \frac{۱}{۴}-\frac{۱}{۲}+۱=\frac{۳}{۴}$

$(\frac{۳}{۴}, +\infty)$ ✓

سوال ۲ (۲)

$y=[x]-۲x$

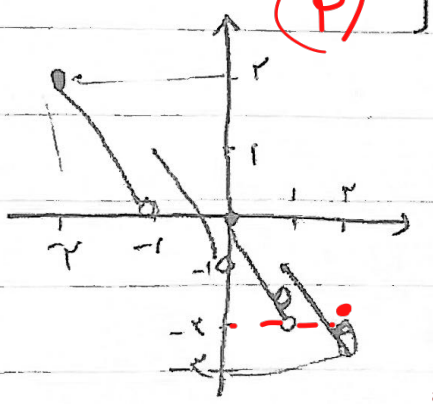
$-۲\leq x<-۱ \Rightarrow -۲-۲x$

$-۱\leq x<۰ \Rightarrow -۱-۲x$

$۰\leq x<۱$ $\quad -۲x$ ✓

$۱\leq x<۲$ $\quad ۱-۲x$

$x=۲ \rightarrow ۲-۲x ۲ \quad y=-۲$



انتهای بازه باید مشخص باشه

$y=[x]|x|$

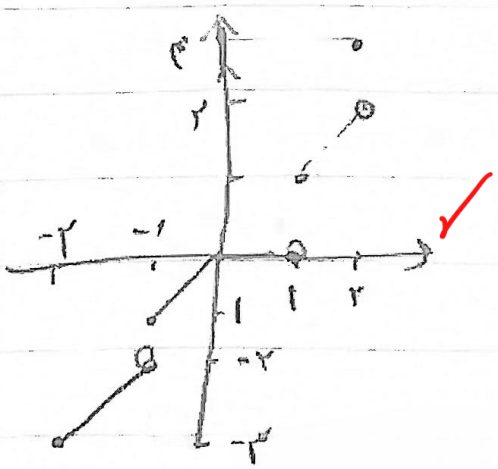
$-۲\leq x<-۱ \rightarrow y=۲x$

$-۱\leq x<۰ \rightarrow y=x$ ✓

$۰\leq x<۱ \rightarrow y=۰$

$۱\leq x<۲ \rightarrow y=x$

$x=۲ \quad y=۲$



✓