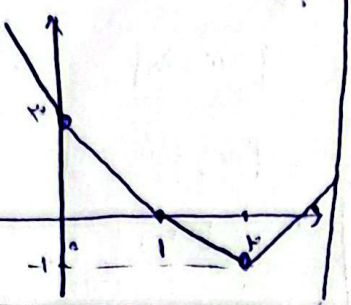
نام و نام خانوادگی ..امیرحسین..خاشعی.. پاسخنامه تشریحی تکلیف شماره ...۷... کلاس ...یازدهم...ریاضی...B....

۱

الف)

$x \geq 2 \rightarrow 3x - 4$

$x < 2 \rightarrow -x + 4$



$R_f = [2, +\infty)$

ب)

$x \geq 2 \rightarrow x - 3$

$2 > x \geq 1 \rightarrow -x + 1$

$1 > x \geq 0 \rightarrow -3x + 3$

$0 > x \rightarrow -x + 3$

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

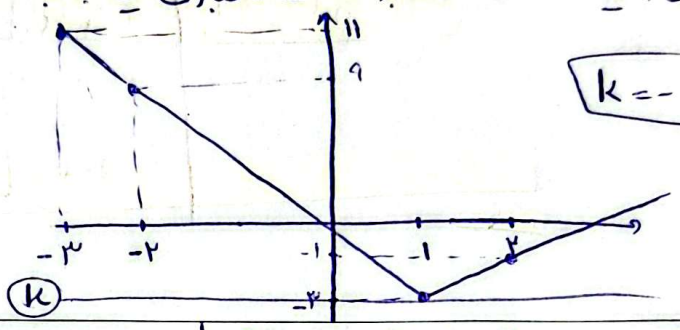
۲

$|3x - 2| - |x + 2| = k$ باید با یک دقعه از نمودار برخورد کند تا عبارت یک جواب داشته باشد

$x \geq 1 \rightarrow 2x - 5$

$1 > x \geq -2 \rightarrow -4x + 1$

$x < -2 \rightarrow -2x + 5$



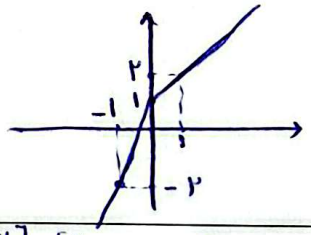
$k = -3$

۳

الف)

$x \geq 0 \rightarrow x + 1 = y$

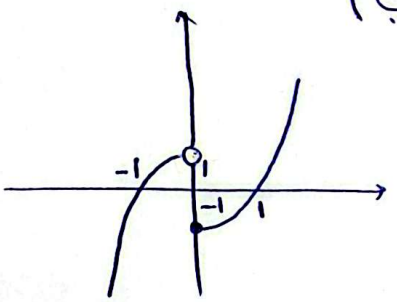
$x < 0 \rightarrow x - 1 = y$



ب)

$x \geq 0 \rightarrow x^2 - 1$

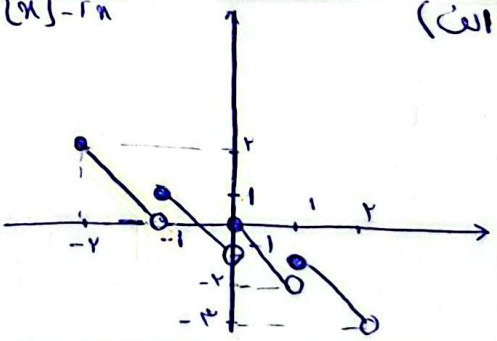
$x < 0 \rightarrow -x^2 + 1$



۴

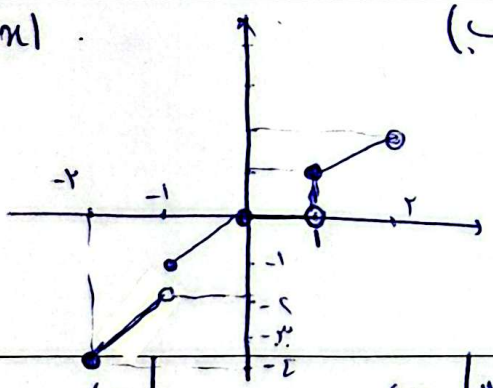
الف)

$y = [x] - 2x$



ب)

$y = [x]|x|$



۵

الف)

$1 > [3x] - 3x \geq 0$

$R_f = [0, 1)$

ب)

$y = 4x - 4[x]$

$4(x - [x])$

$1 > x - [x] \geq 0$

$4 > 4(x - [x]) \geq 0$

$R_f = [0, 4]$

ج ۱)

$x \in \mathbb{Z} \rightarrow 0$

$x \notin \mathbb{Z} \rightarrow 1 > y > 0$

$R_f = [0, 1)$

ج)

$-1 < [2x] - 2x \leq 0$

$R_f = (-1, 0]$

۶

الف) $-\sqrt{3^2+4^2} \le 3\sin x + 4\cos x \le +\sqrt{3^2+4^2} \longrightarrow R_f = [-5, 5]$

ب) $-\sqrt{4^2+(-3)^2} \le 4\sin x - 3\cos x \le +\sqrt{4^2+(-3)^2} \Rightarrow R_f = [-5, 5]$

ج) $R_{\text{هسته}} = [-\sqrt{29}, \sqrt{29}] \longrightarrow R_f = \{-6, -5, \dots, 5\}$

د) $R_{\text{هسته}} = [-\sqrt{5}, \sqrt{5}] \longrightarrow R_f = [0, \sqrt[4]{5}]$

۷

الف) تابع درجه دوم، min imum

$D_f = [-1, 1]$

$y_s \rightarrow \frac{-\Delta}{4a} = \frac{-(9-4(1)(2))}{4} = -\frac{1}{4}$ min

$x=1 \longrightarrow y=6 \longrightarrow max$

$x=-1 \longrightarrow y=0$

$R_f = [-\frac{1}{4}, 6]$

ب) $D_f = [-1, 1]$

$x=-1 \longrightarrow y=1$

$x=1 \longrightarrow 7 = y$ _ max

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

$R_f = [\frac{7}{8}, 7]$

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الف) $y = \sin^2 x + 4\cos^2 x \longrightarrow 1 + 3\cos^2 x \longrightarrow 3\cos^2 x + 1$ $\quad D_f = [0, 1]$

$\cos x = 0 \longrightarrow 1$

$\cos x = 1 \longrightarrow 4$

$\cos x = \frac{-b}{2a} \longrightarrow \cos x = 0 \longrightarrow 1$

$R_f = [1, 4]$

ب) $y = \frac{2\cot x}{1+\cot^2 x} \Rightarrow 1+\cot^2 x = \frac{1}{\sin^2} \longrightarrow y = 2 \times \cot x \times \sin^2$

$y = 2 \times \cos x \times \sin x \Rightarrow 2\sin x \cos x = \sin 2x \longrightarrow y = \sin 2x$

$R_f = [-1, 1]$

۹

الف) $2^{1-k} \le \sin^{2k} + \cos^{2k} \le 1$

$2^{1-3} \le \sin^6 x + \cos^6 x \le 1$ $\quad R_f = [\frac{1}{4}, 1]$

ب) $\frac{1}{8} \le \sin^8 x + \cos^8 x \le 1$ $\quad R_{\text{هسته}} = [\frac{1}{8}, 1]$

$R_f = \{0, 1\}$

۱۰

الف) $y = \frac{2x^2 + 7x - 4}{x + 4} \longrightarrow yx + 4y = 2x^2 + 7x - 4 \longrightarrow 2x^2 + (7-y)x - 4y - 4 = 0$

$\Delta \ge 0 \longrightarrow (7-y)^2 - 4(2)(-4y-4) \ge 0 \longrightarrow 49 + y^2 - 14y + 32y + 32 \ge 0$

$y^2 + 18y + 81 \ge 0 \quad (x+9)^2 \ge 0$ $\quad$ (sign chart: -9; $+\ +$) $\quad R_f = \mathbb{R}$

ب) $y = \frac{x^3 - 1}{x - 1} = \frac{(x-1)(x^2+x+1)}{x-1} \Rightarrow x^2 + x + 1$ $\quad y_s = \frac{-\Delta}{4a} = \frac{-(1-4(1)(1))}{4} = \frac{3}{4}$

$R_f = [\frac{3}{4}, +\infty) - \{3\}$

بود به ازای ریشه مخرج