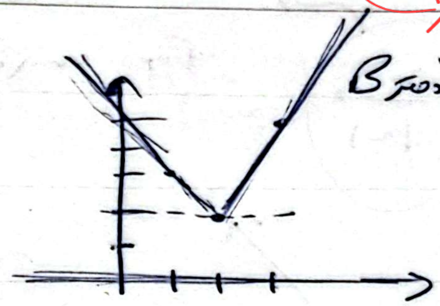
۱۹

کیمیا عطایی یازدهم تجربی B

۱) الف)



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

$R_f = [2, +\infty)$

ب)

پ)

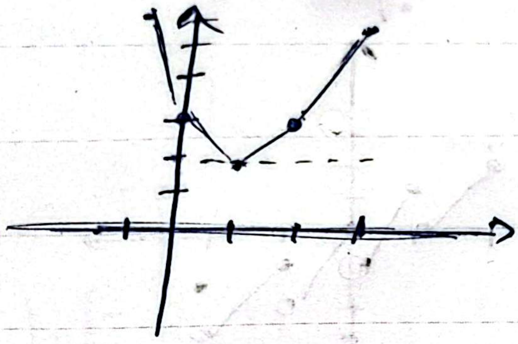
$|x-2| + |x-1| + |x|$

$x > 2 :\quad x - 2 + x - 1 + x = 3x - 3$

$2 > x > 1 :\quad 2 - x + x - 1 + x = x + 1$

$1 > x > 0 :\quad 2 - x + 1 - x + x \Rightarrow 3 - x$

$x < 0 :\quad 2 - x + 1 - x - x = 3 - 3x$

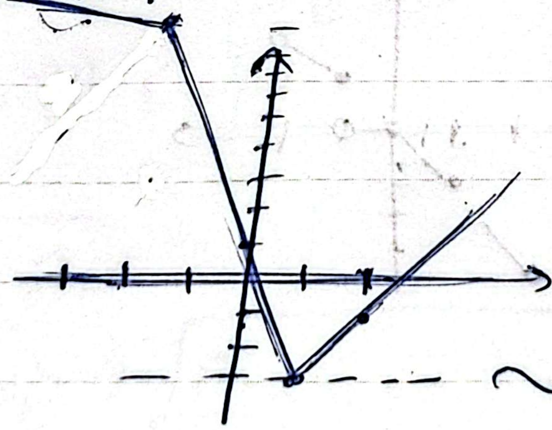


$R_f = [2, +\infty)$

۲)

$|2x - 3| - |x + 2| = k \qquad k ?$

ب)



$\rightsquigarrow k = -3$

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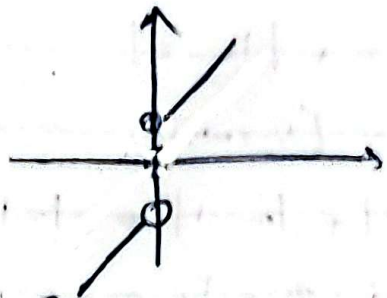
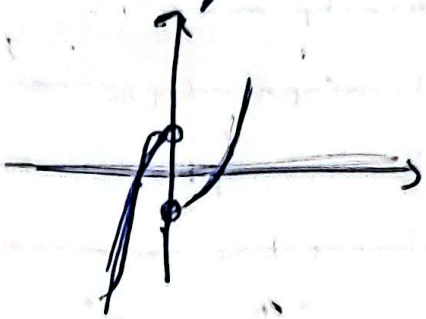
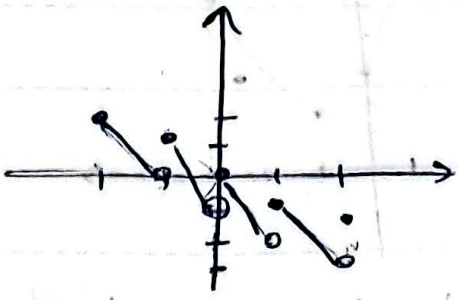
$y = x + \frac{x}{|x|}$ → for $x > 0 = 1$, for $x < 0 = -1$



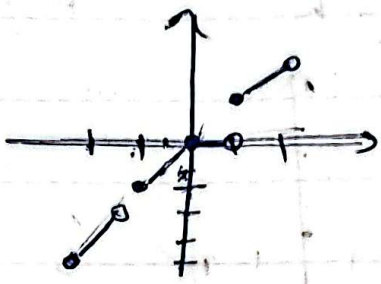
$y = x|x| - \frac{x}{|x|}$



$y = [x] - 2x$



$y = [x]|x|$



$y = e_x - [e_x]$ $\quad e_n = \alpha \cdot 1 \quad \alpha - [\alpha] < 1$

$[0, 1)$

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

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$y = x - 5\left[\frac{x}{5}\right]$ ⇝ $5\frac{x}{5} - 5\left[\frac{x}{5}\right] = 5\left(\frac{x}{5} - \left[\frac{x}{5}\right]\right)$

$5 \times [0,1) = [0,5)$

$y = [\pi] - \pi = (-1, 0]$

$y = 3\sin x + 4\cos x$ ⑨ $\quad |a\sin x + b\cos x| \leq \sqrt{a^2+b^2}$

$\sqrt{a^2+b^2}$

↳ $[-\sqrt{25}, +\sqrt{25}]$

⑤

$y = 3\sin x - 4\cos x$ ↳ $[-5, +5]$

$y = [3\sin x + 5\cos x]$

↳ $[-\sqrt{34}] = -6$

$[\sqrt{34}] = 5$

$\{k \in \mathbb{Z}, -6 \leq k \leq 5\}$

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

زیر رادیکال مثبت شود ↳ $\sqrt{[-\sqrt{5}, \sqrt{5}]} = [0, \sqrt[4]{5}]$

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۷)

$y = \sin^2 x + 3\sin x + 2 \xrightarrow{-1} 0$, $1 \to 6$, $[0, 6]$

$\sin x_{ext} = \frac{-3}{2}$ ✗

(ج)

$y = 2\sin^2 x + 3\sin x + 2 \longrightarrow \sin x_{ext} = -\frac{3}{4} \longrightarrow$

$2\left(\frac{9}{16}\right) - 3\left(\frac{3}{4}\right) + 2 = \frac{7}{8}$

$-1 \to 2 - 3 + 2 = 1$, $1 \to 7$

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

۸)

$y = \sin^2 x + 4\cos^2 x = 1 + 3\cos^2 x \longrightarrow [1, 4]$

(ج)

$y = \frac{2\cot x}{1+\cot^2 x}$, $1+\cot^2 x \to \csc^2 x$, $\frac{2\sin^2 x \cos x}{\sin x} = \sin 2x \to [-1, 1]$

۹)

$y = \sin^6 x + \cos^6 x \longrightarrow k = 3$

$[\frac{1}{4}, 1]$

(ج)

$y = [\sin^8 x + \cos^8 x] \Rightarrow \{0, 1\}$

۱۰)

$y = \frac{2x^2 + 7x - 4}{x + 4}$

$2x^2 + 7x - 4 \;\big|\; x + 4$

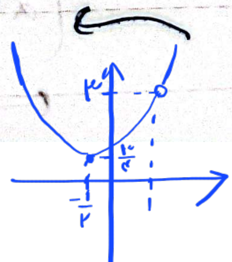
$-(2x^2 + 8x) \quad\; 2x - 1$

$-x - 4$

(۱)

$2x - 1$ → $\mathbb{R} - \{-9\}$

$2 + 4 - 1$



ب) $[\frac{3}{2}, +\infty)$

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