

(بنام خدا)

حساب خالص / تلف ۵ / (طرح هم دفتر B)

الف) $y = \frac{|x|+1}{|x|-2} \rightarrow y = \frac{\square+1}{\square-2} \rightarrow \frac{1}{\square-2} = y - \frac{1}{\square+1}$

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ب) $y = \frac{x^2+1}{|x|} \rightarrow y = \frac{(|x|)^2+1}{|x|} \rightarrow y = |x| + \frac{1}{|x|}$

$(-\infty, -\frac{1}{2}] \cup (1, +\infty)$

$R_f = [2, +\infty)$

$y = \frac{x^2+2x-2}{x+3} \rightarrow x^2+2xy = x^2+2x(x-2)$

$R_f = [R-(y+2), \dots]$

$\Delta = (y+2)(y+3)$

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$R_f = ?$

$\Delta = (x-y)^2 - 4(-2-y)y = y^2 - 4y + 8 + 4y^2 = 5y^2 - 4y + 8$

$R_f = [0, 1]$

الف) $f(x) = \frac{x^2-x+1}{x^2-x+1} \rightarrow \frac{\square+\frac{1}{\square}}{\square+1} \rightarrow \frac{1}{\square+1} = y - \frac{1}{\square}$

ب) $R_f = ?$

گراف $y = \frac{1}{x+1}$ را ببینید.

$y_{\min} = -\frac{1}{2} \rightarrow y_{\max} = 1$

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الف) $y = \sqrt{-x^2+8x+1}$

ب) $y = \sqrt{2x^2-18x}$

$y_{\min} = -\frac{b^2}{4a} \rightarrow 0 - \frac{49}{4} \rightarrow [-\frac{49}{4}, +\infty)$

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الف) $y = \log(x^3-x+1)$

ب) $y = \log_2 \left(\frac{x^2+1}{x} \right)$

گراف $y = \log_2(x)$ را ببینید.

$\log_2(1) = 0$

$\log_2(2) = 1$

$\log_2(4) = 2$

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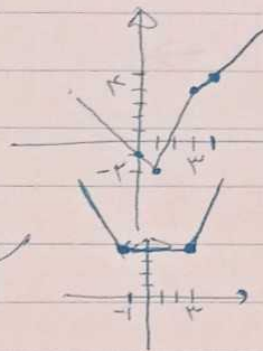
6

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

$$\frac{2x-1-x+3}{-x+2} \quad \frac{2x-1-x-3}{-x-2} \quad \frac{2x-1-x-3}{-x-2} \rightarrow x < 2$$

$$y = |x-2| + |x+1| \rightarrow \text{المثلث}$$

$$\frac{x-1+x-2}{-x+1} \quad \frac{x-2-x-1}{-x-1} \quad \frac{x-2-x-1}{-x-1} \rightarrow x < -1$$



$$(-\infty, +\infty)$$

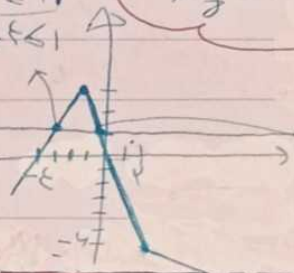
$$(-\infty, +\infty)$$

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$$|x-2| - |x+1| \leq 1$$

$$R_f = K - \left(-\frac{1}{4}, -\frac{1}{4}\right)$$

$$\frac{x-2+x+1}{x+1} \quad \frac{x-2-x-1}{-x-1} \quad \frac{x-2-x-1}{-x-1} \rightarrow x < -1$$



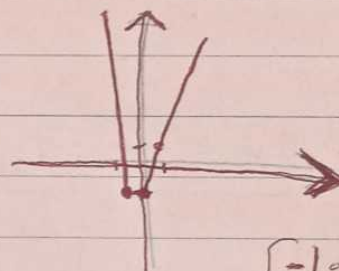
$$-\frac{1}{4}x \leq 1$$

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$$y = 3x - |2x+1| + |x|$$

$$R_f = ?$$

$$\frac{3x+2x+1-x}{x+1} \quad \frac{3x+2x-1-x}{-x-1} \quad \frac{3x+2x-1-x}{-x-1} \rightarrow x < -1$$



$$(-1, +\infty)$$

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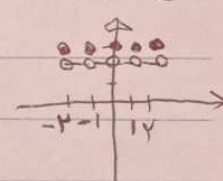
$$a) y = [x] + [1-x]$$

$$\rightarrow [x] + [-x] + 1$$

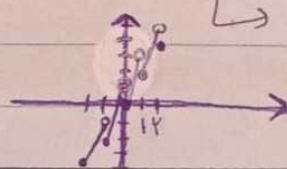
$$x \in \mathbb{Z} \rightarrow y = 1$$

$$x \notin \mathbb{Z} \rightarrow y = 0$$

$$x \in [1, 2]$$



$$b) y = 3x - [x]$$



$$\begin{aligned} -2 \leq x < -1 &\rightarrow 3x+2 \leq y < 3x+1 \\ -1 \leq x < 0 &\rightarrow 3x+1 \leq y < 3x \\ 0 \leq x < 1 &\rightarrow 3x \leq y < 3x+1 \end{aligned}$$

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$$a) y = \sin^2 x - \sin x + 1 \quad \sin x = \frac{b}{a} \rightarrow \frac{1}{2} \rightarrow \frac{1}{2} - \frac{1}{2} + 1 = 1$$

$$-1 \leq \sin x \leq 1 \rightarrow \sin x \geq 1 \rightarrow y \geq 1$$

$$R_f = \left[\frac{1}{2}, 3\right]$$

$$\frac{1}{2}$$

$$b) y = \sin^2 x + \sin^2 x + 1$$

Elegance

$$\sin^2 x = \frac{b}{a} = \frac{1}{2} \rightarrow \frac{1}{2}$$

$$\sin^2 x \geq 1 \rightarrow y \geq 3$$

$$\sin^2 x \geq 0 \rightarrow y \geq 1$$

$$[1, 3]$$