

Subject: ( )

19,0

Date: .....

الف)  $y = x^2 - 2x + 1 + 1 \Rightarrow (x-1)^2 + 1 = y$  (5) (1)

$\Rightarrow (x-1)^2 = y-1 \Rightarrow x-1 = \sqrt{y-1} \Rightarrow x = \sqrt{y-1} + 1$

$R_f = \mathbb{R}$

ب)  $y = \frac{1}{x^2 - 2x} \Rightarrow yx^2 - 2yx = 1 \Rightarrow yx^2 - 2yx - 1 = 0$   
 $\Delta \geq 0$

$b^2 - 4ac = (-2y)^2 - 4x(y)(-1) = 4y^2 + 4y \geq 0$

$4y(y+1) \geq 0$

$\begin{array}{c} -1 \quad 0 \\ | \quad | \\ + \quad - \quad + \end{array}$

$\downarrow \quad \downarrow$   
 $0 \quad -1$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y}$

$2y \neq 0 \Rightarrow y \neq 0$

$\cap \Rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$

الف)  $y = x^2 - 2x + 1$  (5) (2)

$x_{ext} = \frac{-b}{2a} = \frac{1}{1} = 1 \Rightarrow \underbrace{(1)^2}_{=1} - \underbrace{2(1)}_{=2} + 1 = 0 \quad a > 0$

$\Rightarrow R_f = [0, +\infty)$

ب)  $y = -x^2 + 4x + 3$

$\underbrace{-(-3)}_{=3} + \underbrace{4(1)}_{=4} + 3 = 10$

$a < 0 \Rightarrow (-\infty, 10]$

$x_{ext} = \frac{-b}{2a} = \frac{-4}{-2} = 2$

ج)  $y = \sqrt{x^2 - 2x - 3}$

$\Rightarrow x^2 - 2x - 3 \geq 0 \Rightarrow x_{ext} = \frac{-b}{2a} = \frac{1}{1} = 1 \Rightarrow$

$\underbrace{1 - 2(1) - 3}_{=-4} = -4 \Rightarrow \underbrace{[-1, 3]}_{a > 0} \Rightarrow \sqrt{[-1, 3]}$

$\Rightarrow R_f = [0, +\infty)$

د)  $y = \sqrt{4x - x^2}$

$\Rightarrow 4x - x^2 \geq 0 \Rightarrow x_{ext} = \frac{-b}{2a} = \frac{-4}{-2} = 2 \Rightarrow \sqrt{[0, 4]}$

Arman

$\Rightarrow 4 \times 1 - (1)^2 = 11 - 9 = 2 \Rightarrow (-\infty, 9] = [0, 4]$   
 $a < 0$

$$\text{الف) } y = x^2 - 8x^2 + 2x + 1 \Rightarrow R_f = \mathbb{R}$$

⑤ ③

$$\text{ب) } y = x^2 - 2x^2 + 2x + 1 \Rightarrow R_f = \mathbb{R}$$

$$\text{ج) } y = \sqrt{x^2 - 4x^2 + 8x + 1} \Rightarrow R_f = [0, +\infty)$$

$$\text{د) } y = (x^2 - 2x^2 + 2x + 1)^2 \Rightarrow R_f = [0, +\infty)$$

$$\text{هـ) } y = \frac{2x + 1}{x - 2} \Rightarrow R_f = \mathbb{R} - \{2\}$$

⑤ ④

$$\text{و) } y = \frac{2x + 1}{x + 1} \Rightarrow R_f = \mathbb{R} - \{2\}$$

$$\text{ز) } y = \sqrt{\frac{2x + 1}{x + 1}}$$

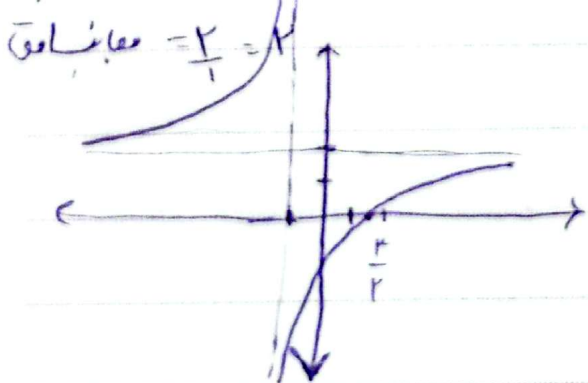
⑤ ⑤

$$\Rightarrow R_f = \mathbb{R} - \{2\} \Rightarrow [0, +\infty) - \{\sqrt{2}\}$$

$$\text{ح) } y = \sqrt{\frac{2x + 1}{-x + 2}} \Rightarrow R_f = [0, +\infty)$$

$$\text{ط) } y = \frac{2x - 3}{x + 1} \Rightarrow R_f = \mathbb{R} - \{-1\}$$

$$\text{معادله قائم: } x + 1 = 0 \Rightarrow x = -1$$



$$\frac{2x - 3}{x + 1} = 2 \Rightarrow 2x - 3 = 2x + 2 \Rightarrow -3 = 2 \Rightarrow \text{No solution}$$

$$R_f = \mathbb{R} - \{-1\}$$

$$ad-bc \neq 0 \Rightarrow \frac{ax+y}{a} = \frac{1}{(-1 \times 1)} \cdot \frac{y}{c}$$

$$\lim_{x \rightarrow \infty} y - 1 = 0 \Rightarrow y_0 = 1 \Rightarrow n = \frac{1}{r}$$

⑤ ④

$$V(r, +\infty)$$

$$P_f = (-\infty, -r]$$

$$U[r, +\infty)$$

$$\rho_f = (-\infty, -1]$$

$$U[r, +\infty)$$

$$R_f = [r, +\infty)$$

⑤ ④

$a + \frac{1}{n}$

$$u + \frac{1}{u} = \frac{1}{u} \Rightarrow \left( \frac{1}{u}, +\infty \right) \cup \dots$$

$$R_f = \left[ \frac{1}{\mu}, +\infty \right)$$

— *Arman.*

$$\min(\alpha) = 2\alpha = 1 \Rightarrow \sqrt{K} = 2 \quad \frac{1}{\alpha}$$

$$Y + \frac{1}{Y} = \frac{\sigma}{Y} \Rightarrow R_f = \left[ \frac{\sigma}{Y}, +\infty \right)$$

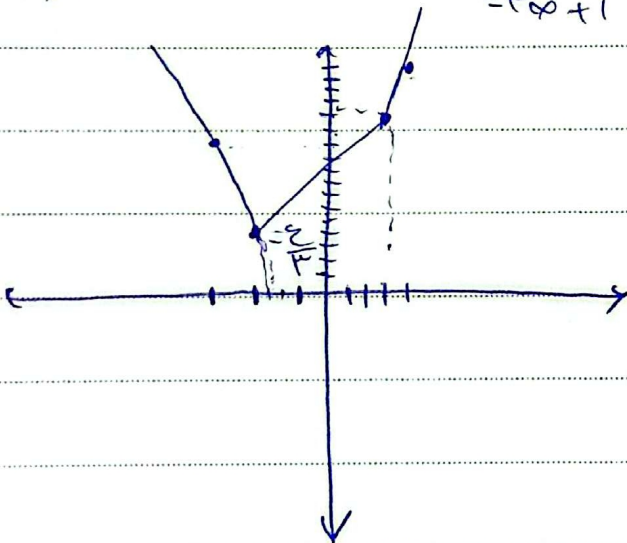
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$$f_{\infty} + \varepsilon = 1 \Rightarrow f_{\infty} = -\varepsilon \Rightarrow \underline{f_{\infty} = -\frac{\varepsilon}{\mu}}$$

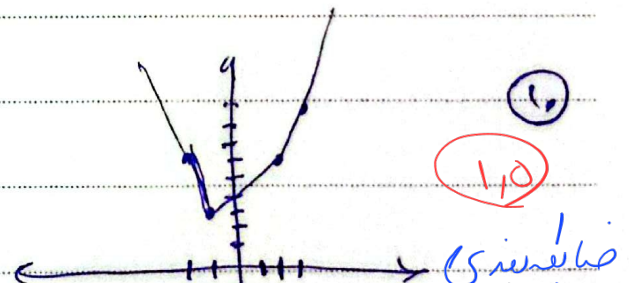
$$-E(-\frac{E}{\mu} \otimes) - 1$$

$$\frac{14}{x} - \frac{x}{2} = \frac{12}{x} = 3 \cdot \frac{1}{x}$$

$$R_f = \left[ \frac{1}{\mu}, +\infty \right)$$



↓  
P



|    |   |   |   |   |
|----|---|---|---|---|
| 90 | 1 | 2 | 3 | 4 |
| 5  | 6 | 7 | 8 | 9 |

$$\mu \quad K + \mu$$

$$P_f = [1, +\infty)$$

$$\begin{array}{c|c|c} -1 & & \mu \\ \hline -\mu\alpha & \alpha + \mu & \mu\alpha \end{array}$$

المطلوب

Date:

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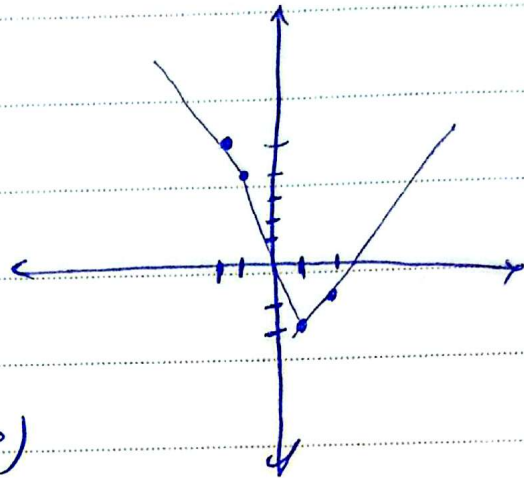
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$$y = |x-2| - |x+1|$$

$\downarrow$                        $\downarrow$   
 $2, 1$                        $2, -1$

|     |      |      |      |      |
|-----|------|------|------|------|
| $x$ | $-2$ | $-1$ | $1$  | $2$  |
| $y$ | $2$  | $1$  | $-1$ | $-1$ |

$$R_F = [-2, +\infty)$$



$$\begin{array}{c|c|c} -1 & 1 & \\ \hline -2+2 & -2+1 & 2-2 \end{array}$$