

⑤

$$R_f(-a, -1) \cup (v, +a) \quad \checkmark$$

(5)

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(15)

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~~$R_L \left(\frac{\epsilon \sqrt{P}}{r}, +\infty \right)$~~

$$R_f = \left\{ \frac{20}{\epsilon}, +0 \right\}$$

①

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(c)

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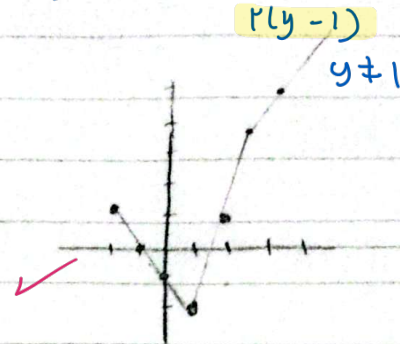
(1, 2)

$$f(x) = \frac{x^2 - x + \frac{1}{x}}{x^2 - x + 1} \quad R_f: yx^2 - yx + y = x^2 - x + \frac{1}{x} \rightarrow (y-1)x^2 - (y-1)x + y = \frac{1}{x} \quad (*)$$

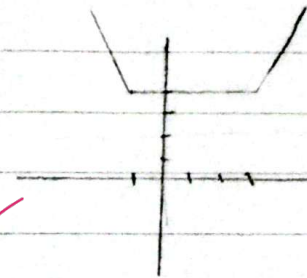
$$x_2 = \frac{y-1}{1(y-1)} = \frac{1}{y} \quad y_2 = \frac{1}{y} \rightarrow \left\{ \frac{1}{y}, +\infty \right\} \quad x = \frac{(y-1) \pm \sqrt{(y-1)^2 - 4(y-\frac{1}{2})(y-1)}}{2(y-1)}$$

$$\Delta \geq 0 \rightarrow 0 \leq y < 1$$

$$y = |x-2| - |x-3| \quad \begin{cases} -x-1 & x < 1 \\ 3x-5 & 1 \leq x \leq 3 \\ x+1 & x > 3 \end{cases}$$



$$10 \quad y = |x-2| + |x+1| \quad \begin{cases} -2x+3 & x < -1 \\ 1 & -1 \leq x \leq 2 \\ 2x-1 & x > 2 \end{cases}$$



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

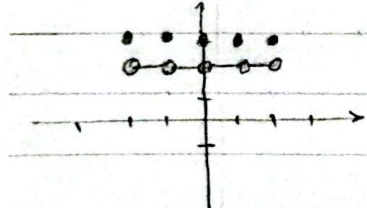
$$\begin{aligned} -x+3 & \leq x+1 & -x+3-2x-1 & \leq 1 & x-2-2x-1 & \leq 1 \\ x+2 & \leq 1 & -3x & \leq 1 & -x-3 & \leq 1 \\ x & \leq -3 & x & \geq -\frac{1}{3} & x & \geq -2 \end{aligned}$$

$$15 \quad (-\infty, -3] \cup [-\frac{1}{3}, +\infty)$$

$$17 \quad y = \{x\} + \{3-x\} \quad \rightarrow y = 3 - \{x\}$$

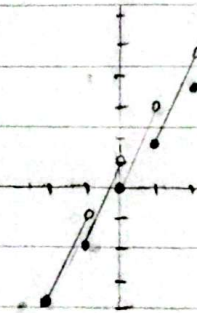
$$y = \{x\} + \{-x\} + 3$$

$$20 \quad 1 \leq x \leq 2 \quad Ry = \{3, 2\}$$



$$\begin{aligned} -x < -1 & \Rightarrow 3x+2 \\ -1 \leq x < 2 & \Rightarrow 3x+1 \\ 0 \leq x < 1 & \Rightarrow 3x \\ 1 \leq x < 2 & \Rightarrow 3x-1 \\ x \in [2, 3] & \Rightarrow 3x-2 \end{aligned}$$

$$Ry = [-2, 3]$$



$$25 \quad y = \sin^2 x - \sin^2 x + 1$$

$$\begin{aligned} \sin^2 x = 1 & \quad y = 1 \\ \sin^2 x = 0 & \quad y = 0 \\ \sin^2 x = \frac{1}{4} & \quad y = \frac{1}{4} \end{aligned}$$

$$R_f = \left\{ \frac{1}{4}, 0 \right\}$$

$$30 \quad y = \sin^2 m + \sin^2 m + 1 \quad \rightarrow \sin^2 m = 1 \quad y = 3$$

$$\sin^2 m = 0 \quad y = 1$$

$$\sin^2 m = \frac{1}{4} \quad y = \frac{1}{4}$$

$$R_f = [1, 3]$$

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