

۲۰ آفرین

دارم (فر)

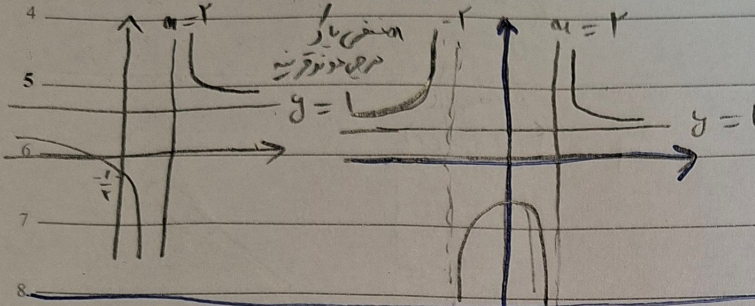
نت سس کند

①

$$g = \frac{|a| + 1}{|a| - 2}$$

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

(۲)



$$b) g = \frac{|a|^2 + 1}{|a|} = |a| + \frac{1}{|a|}$$

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

②

$$y = \frac{a^2 + 2a - 1}{a + 3}$$

$$ya + 3y = a^2 + 2a - 1$$

$$\Delta \geq 0 \quad \Delta = b^2 - 4ac$$

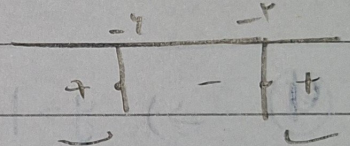
$$a^2 + (2-3y)a + (-1-3y) = 0$$

(۲)

$$\Delta = (2-3y)^2 - 4(1)(-1-3y) = 4 + 12y + 9y^2 = (3y+4)^2$$

$$R_g = (-\infty, -4] \cup [-2, +\infty)$$

$$y^2 + 4y + 12$$



③

$$f(a) = \frac{a^2 - a + 1}{a^2 - a + 1} = \left(a - \frac{1}{2}\right)^2 + \frac{3}{4}$$

$$\left(a - \frac{1}{2}\right)^2 + \frac{3}{4}$$

$$\boxed{D_f = \mathbb{R}} \quad (= \text{مجموعه حقیقی})$$

(۲)

$$\left(a - \frac{1}{2}\right)^2 = t$$

$$y = \frac{t}{t + \frac{3}{4}} \rightarrow yt + \frac{3}{4}y = t \rightarrow yt - t = -\frac{3}{4}y \rightarrow t = \frac{-\frac{3}{4}y}{y-1}$$

$$\left(a - \frac{1}{2}\right)^2 = \frac{-\frac{3}{4}y}{y-1}$$

$$R_g = [-1, 1]$$

④

$$f(a) = \sqrt{-a^2 + 6a - 1}$$

$$y = \sqrt{6a^2 - 6a}$$

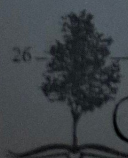
(۲)

$$a_5 = +2 \quad y_5 = +3$$

$$a_5 = +2 \quad y_5 = -1$$

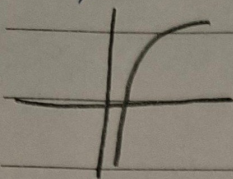
$$y = \sqrt{(-\infty, 3]} \rightarrow R_g = [0, \sqrt{3}]$$

$$y = \sqrt{[-1, +\infty)} \rightarrow R_g = [\sqrt{3}, +\infty)$$



(3) $y = \log_r \frac{a^x + 1}{a} = \log_r a^x - a + 1 \rightarrow 1/R$

$\Rightarrow \log_r \frac{a^x + 1}{a} = x + \frac{1}{a}$



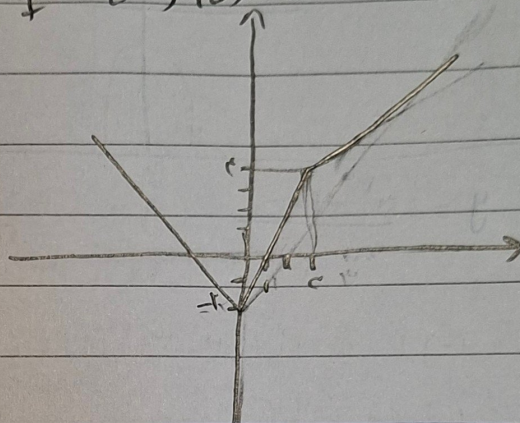
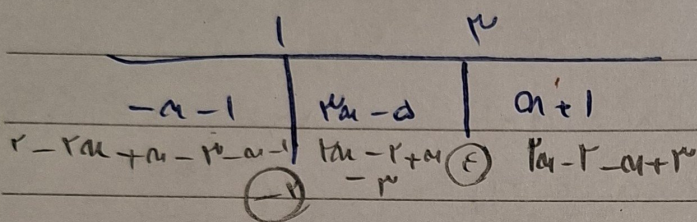
$R_y = 1/R$

$\log_r [r_2 + \infty) = [1, +\infty)$

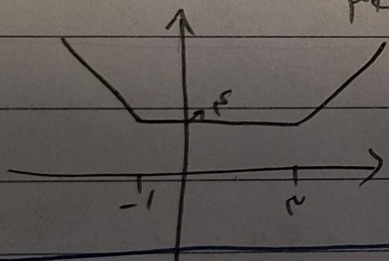
$R_y = [1, +\infty)$

(4) $y = |x - r| - |x - r|$

$R_y = [-r_2, +\infty)$



(5) $\Rightarrow y = |x - c| + |x + 1|$



$R_y = [c, +\infty)$

(6) $|x - r| - |x + r| ≤ 1$

$I \mid x \in [r, +\infty)$

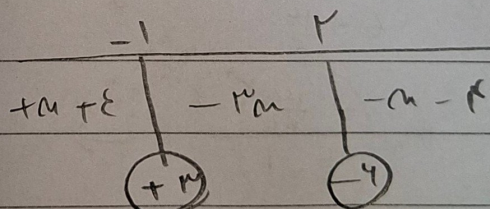
if $x \geq r$ $-x - c \leq 1 \rightarrow x \geq -a$

if $x \geq r$ $-x \leq 1 \rightarrow x \geq -\frac{1}{r}$

$II \mid x \in [-\frac{1}{r}, r]$

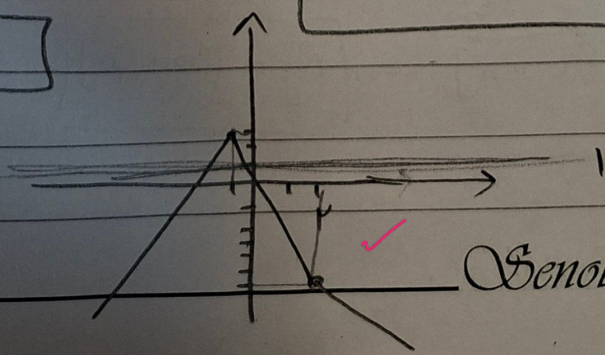
if $x \leq -1$ $x + c \leq 1 \rightarrow x \leq -c$

$II \mid x \in (-\infty, c]$



$I \cap II \cap III \Rightarrow (-\infty, -r) \cup [-\frac{1}{r}, r] \cup [r, +\infty)$

$\Rightarrow (-\infty, -r) \cup [-\frac{1}{r}, +\infty)$



1. $y = \mu a - |\mu a + 1| + |a|$ $(-\infty, -1] - \frac{1}{\mu} \{-1\} \cup [\frac{1}{\mu} + \infty)$ (2)

$\begin{matrix} \mu a + 1 & -1 & \mu a - 1 \\ -1 & & -1 \end{matrix}$

$Ry = IR$ ✓

9. الف) $y = [a] + \mu + [-a] = [a] + [-a] + \mu$ (2)

$\Rightarrow y = \mu a - [a]$

$R_f = \{r, \mu\}$

$R_f = [-\frac{1}{\mu}, a]$

10. الف) $\sin^2 a - \sin a + 1 \frac{+1}{-1}$ (2)

$\frac{-b}{2a} = -\frac{1}{2}$ $\begin{matrix} -1 \\ \frac{1}{2} \end{matrix} + \mu$ $R_f = [\frac{\mu}{2}, \mu]$

$\Rightarrow \sin^2 a + \sin a + 1 \frac{0}{1}$ $\begin{matrix} 1 \\ -\frac{1}{2} \end{matrix} \mu$ $R_f = [1, \mu]$

$\frac{-b}{2a} = -\frac{1}{2}$ $\begin{matrix} 1 \\ -\frac{1}{2} \end{matrix} \mu$