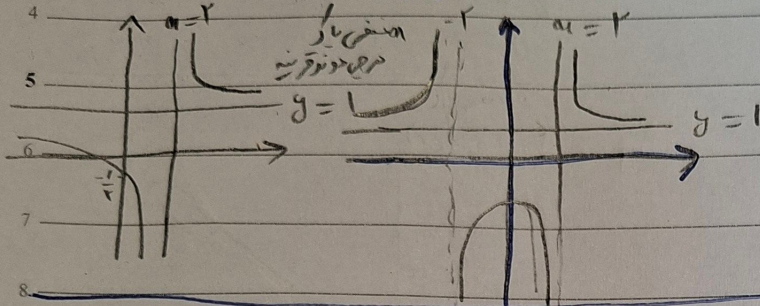


نت سس کنس درازم در

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



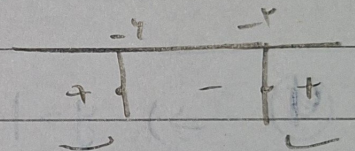
ب) $y = \frac{|a|^2+1}{|a|} = |a| + \frac{1}{|a|}$
 $R_y = [2, +\infty)$

② $y = \frac{a^2+2a-1}{a+3}$ $ya + 3y = a^2 + 2a - 1$ $\Delta \geq 0$ $\Delta = b^2 - 4ac$

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

$\Delta = (3-y)^2 - 4(1)(-2-3y) = 9 - 6y + y^2 + 8 + 12y = y^2 + 6y + 17 = (y+3)^2 + 8$

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



③ $f(a) = \frac{a^2-a+1}{a^2-a+1} = \left(a - \frac{1}{2}\right)^2 + \frac{3}{4}$ $D_f = \mathbb{R}$ $(= \text{مجموعه حقیقی})$

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

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

④ $y = \sqrt{-a^2+2a-1}$

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

$a_5 = +2$ $y_5 = +2$

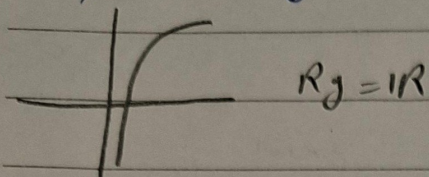
$a_5 = +2$ $y_5 = -1$

$y = \sqrt{(-\infty, 2]}$ $R_y = [0, \sqrt{2}]$

$y = \sqrt{[-1, +\infty)}$ $R_y = [-1, +\infty)$

$$(3) \Rightarrow y = \log \frac{x^r - a + 1}{1 - 1/r}$$

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

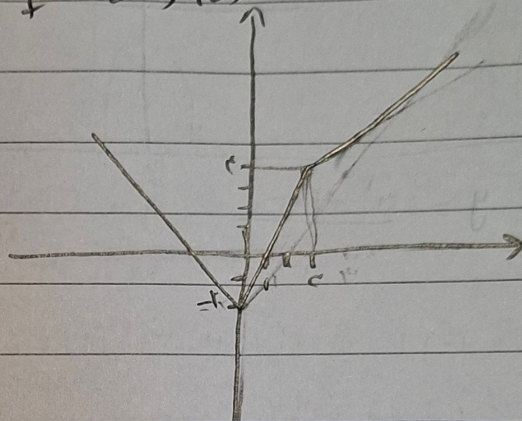
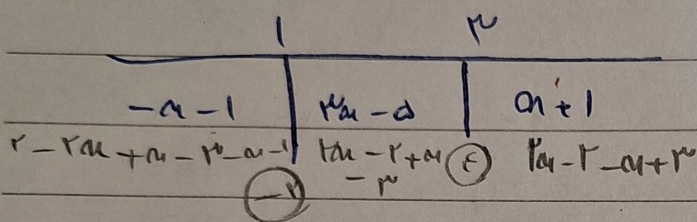


$$R_y = [1/r, +\infty)$$

$$\log_r [x^r + 1] = [1/r, +\infty)$$

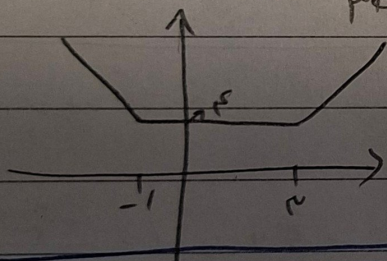
$$(4) \Rightarrow y = |x - r| + |x - 1|$$

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



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

$$r - (-1) = c$$



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

$$(6) \Rightarrow |x - r| - |x + 1| \leq 1$$

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

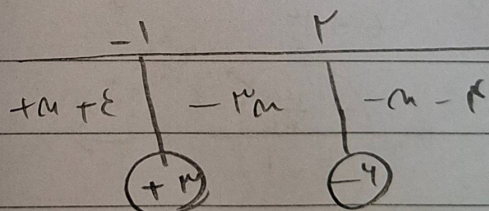
$$\text{if } x \geq r, -x - c \leq 1 \rightarrow x \geq -c - 1$$

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

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

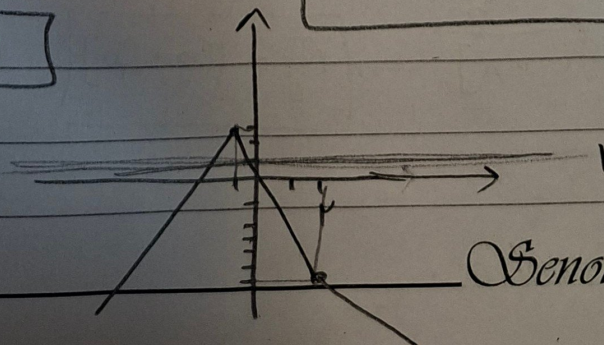
$$\text{if } x \leq -1, x + 1 \leq 1 \rightarrow x \leq -c$$

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



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

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



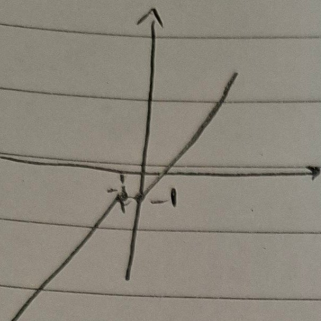
1. $\textcircled{A} \quad y = \mu a - \left| \mu a + 1 \right| + |a|$

2. $\left(-\infty, -1 \right) - \frac{1}{\mu} \quad \left\{ -1 \right\} \circ \left[-1, +\infty \right)$

3. $\left| \mu a + 1 \right| \quad -1 \quad \mu a - 1$

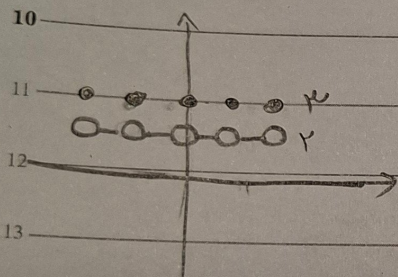
4. $-1 \quad -1$

$R_y = \mathbb{R}$

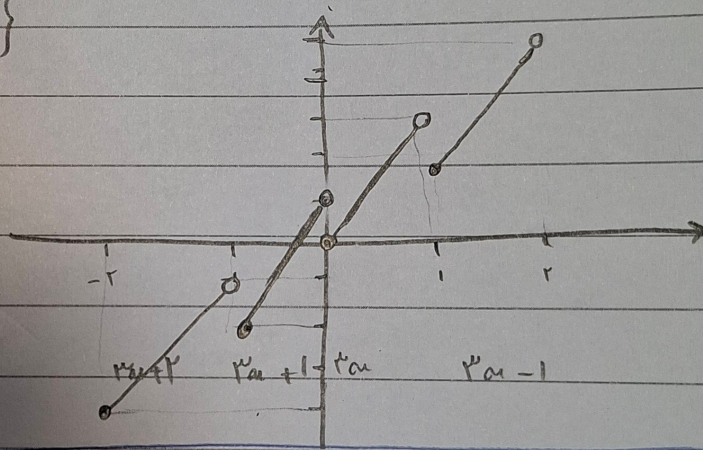


8. $\textcircled{9} \quad \text{الف) } y = [a] + \mu + [-a] = [a] + [-a] + \mu$

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



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



15. $R_f = [-\epsilon, a]$

18. $\textcircled{10} \quad \text{الف) } \sin^{\mu} a - \sin^{\mu} a + 1 \quad \frac{+1}{\mu}$

19. $\frac{-b}{\mu a} = -\frac{1}{\mu}$

20. $\left[-1, \frac{\mu}{\epsilon} \right] + \mu$

21. $\left[\frac{1}{\mu}, \frac{\mu}{\epsilon} \right]$

$R_f = \left[\frac{\mu}{\epsilon}, \mu \right]$

21. $\Rightarrow \sin^{\mu} a + \sin^{\mu} a + 1 \quad \frac{0}{\mu}$

$R_f = [1, \mu]$

22. $\frac{-b}{\mu a} = -\frac{1}{\mu}$

23. $\left[1, \mu \right]$

24. $\left[-\frac{1}{\mu}, \mu \right]$