

فراموشی و زنده ماندن A بر سر آب

الف) $f(a) = 2 \sin^2(a + \frac{\pi}{4}) - 1$ $\begin{cases} \sin^2 a \max = 1 \rightarrow f(a) \max = 1 \rightarrow R_F = [1, 1] - 1 \\ \sin^2 a \min = 0 \rightarrow f(a) \min = -1 \end{cases}$

ب) $3 \cos^2 a - 4$ $\begin{cases} \max = 1 \rightarrow f(a) \max = 1 \\ \min = -1 \rightarrow f(a) \min = -5 \end{cases} \rightarrow R_F = [-5, 1]$

$-3 \leq a < -1 \rightarrow \frac{a}{|a|} = -1, [a] = -3 \rightarrow y = -3$

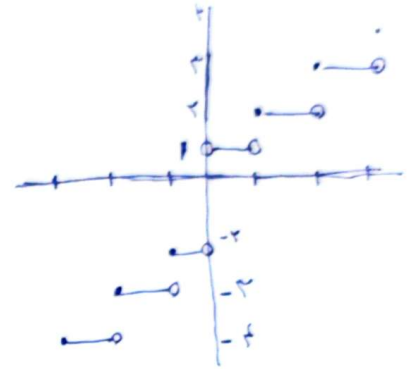
$-1 \leq a < 0 \rightarrow \frac{a}{|a|} = -1, [a] = -1 \rightarrow y = -1$

$0 \leq a < 1 \rightarrow \frac{a}{|a|} = 1, [a] = 0 \rightarrow y = 0$

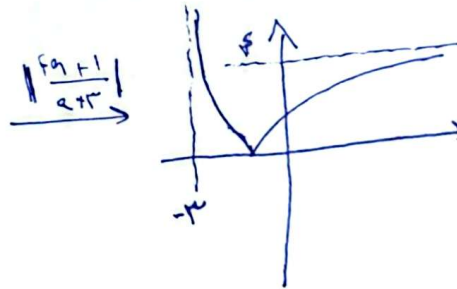
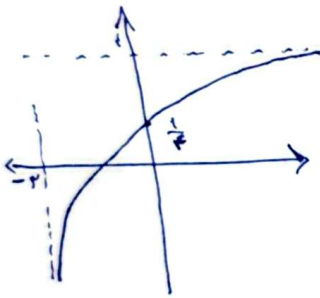
$1 \leq a < 2 \rightarrow \frac{a}{|a|} = 1, [a] = 1 \rightarrow y = 1$

$2 \leq a < 3 \rightarrow \frac{a}{|a|} = 1, [a] = 2 \rightarrow y = 2$

$a = 3 \rightarrow y = 3$



-2



-3

$|y-1| + |a-2| - 5 = 0$

$y > 1, a < 2$

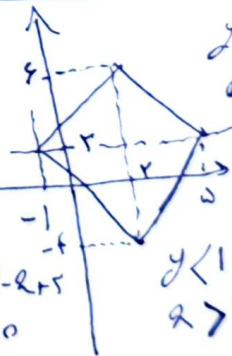
$y-1-a+2-5 = 0$

$y = a+4$

$y < 1, a > 2$

$y-1-a+2-5 = 0$

$y = a-4$



$y > 1, a > 2 \rightarrow y = a+4$

$y < 1, a < 2 \rightarrow y = a-4$

$y = a$

$a + \frac{1}{a} + 5\sqrt{a+\frac{1}{a}} - 2(\sqrt{a+\frac{1}{a}} + 1) - 1 \rightarrow \sqrt{a+\frac{1}{a}} \rightarrow D_F = [5, +\infty)$ (5)

$\rightarrow R_F = (\sqrt{5}+1)^2 - 1 = 5+1+2\sqrt{5}-1 = 5+2\sqrt{5} \rightarrow R_F = [5+2\sqrt{5}, +\infty)$

ب) $(3 - \sin a)(\sin^2 a + 1) = -\sin^2 a + 3\sin a + 3$

$\min \sin a = -1 \rightarrow -1 - 3 + 3 = -1 \rightarrow R_F = [-1, 3]$

$\max \sin a = 1 \rightarrow -1 + 3 + 3 = 5$

$$R_F: \sum (1, r, \dots, r) \rightarrow q_X(1.) + \left(-\frac{1}{r}\right) (1 + r + r^2 + \dots + r^{n-1})$$

$$\rightarrow q. - \frac{r^n}{r} = q. - 1 \cdot r \boxed{V \delta}$$

$$D_F: [r, +\infty) \rightarrow \text{در صورت } \rightarrow a \geq 0, r \text{ دلخواه}$$

$$\rightarrow r b + c \geq 0 \rightarrow b \geq 1, c \geq r$$

$$r b + c \geq 1$$

$$g(a) = \sqrt{a^2 + r} \rightarrow R_{(r)}: [r, +\infty)$$

$$\frac{a(a-r)/(a+r)}{a+r} \rightarrow f(a) = \frac{a^2 - ra}{a+r} = \frac{a^2 - ra - \frac{r^2}{4} + \frac{r^2}{4}}{a+r} \rightarrow \frac{a^2 - ra - \frac{r^2}{4}}{a+r}$$

$$R_F: \mathbb{C}[-1, +\infty) \rightarrow f\left(\frac{1-r}{-r}\right) = f(-1) \text{ (1)}$$

$$\sqrt{(a-r)^r} = a-r \rightarrow \frac{a^2 - r}{b^2} \rightarrow D: [-r, 1] \rightarrow R_F: [-1, r]$$

$$y: [a] + \left[a + \frac{1}{r}\right]$$

