

* ابتدا نمودار تابع را بنویس

$f(x) = [1-x] - [x+4]$

$\Rightarrow R_f = [-5, 5] \rightarrow [R_f] = \{\pm 5, \pm 4, \pm 3, \pm 2, \pm 1, 0\}$

ب) $f(x) = \frac{1}{x} - \left[\frac{x+1}{x} \right] \rightarrow \frac{1}{x} - \left[1 + \frac{1}{x} \right] = \frac{1}{x} - \left[\frac{1}{x} \right] + 1 \rightarrow 0 - [0] + 1$

$\rightarrow R_f = [1, 2]$

تغییر یک واحد به بالا

الف) $y = [-2x] - 1 \quad x \in (-1, 1)$

ب) $y = x - 2\left[\frac{x}{2}\right] \quad x \in (-2, 2)$

الف) $y = [1|x| - 1] \quad x \in [-2, 2]$

ب) $y = [x^2 - 2x] \quad x \in [-1, 2]$

$a + [b] = 4, 2 \rightarrow a + [b] = 4, 2 \rightarrow [b] \in \mathbb{Z} \rightarrow a = 3, 1$

$b - [a] = 2, 4 \rightarrow [a] \in \mathbb{Z} \rightarrow b = 3, 4$

$a + b = 8 \rightarrow a + b = [a] + 0, 2 + [b] + 0, 4 = [a] + [b] + 0, 6 = 8$

$\begin{cases} [a] + [b] = 4 \\ [b] - [a] = 2 \end{cases} \rightarrow \begin{cases} 2[b] = 4 \rightarrow [b] = 2 \\ [a] = 1 \end{cases} \rightarrow 1 + 2 + 0, 6 = (4, 2)$

$(1+\sqrt{2})^4 + (1-\sqrt{2})^4 = 198 \rightarrow \frac{((1+\sqrt{2})^2)^2}{1+2+2\sqrt{2}} + \frac{((1-\sqrt{2})^2)^2}{1+2-2\sqrt{2}} = (3+2\sqrt{2})^2 + (3-2\sqrt{2})^2$

$[(1+\sqrt{2})^4] = 8$

$\Rightarrow (3+2\sqrt{2})(9+4\sqrt{2}) + (3-2\sqrt{2})(9+4\sqrt{2})$

$\Rightarrow 27 + 12\sqrt{2} + 18\sqrt{2} + 16 - 27 - 12\sqrt{2} + 18\sqrt{2} - 16 = 2(21) - 2(2\sqrt{2}) = 2(21 - 2\sqrt{2}) = 42 - 4\sqrt{2}$

$\begin{cases} \sqrt{2} \approx 1, 41 \\ 1 \end{cases} \rightarrow 1 + \sqrt{2} = (2, 41)^4 = 196, 99 \rightarrow [196, 99] = 196$