

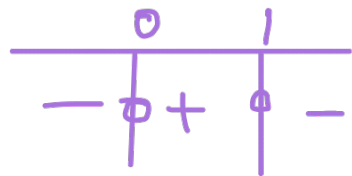
19,0

ما صفرها را پیدا کنیم

f(x) = (1/x)^{n-1} - 1 → f(x+1) = (1/x)^{n-1} - 1 ← 1

x^n * (x^{1-n} - 1) ≥ 0 → x^{1-n} - 1 ≥ 0 → x^{1-n} ≥ 1 → x^0 ≥ 1 → x ≥ 1

D_f = [0, 1]



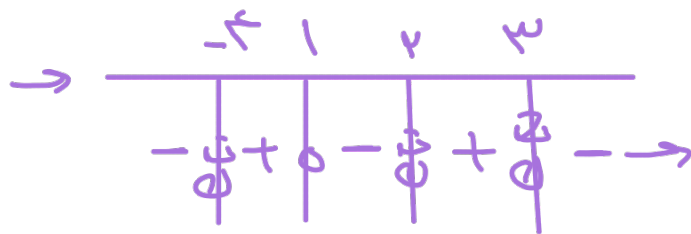
f(x) = sqrt(x+1) * sqrt(x+2) → f(-x) = sqrt(|x-1|) * sqrt(x) → ← 2

|x-1| * x ≥ 0 → x-1 ≥ 0 → 1 ≥ x → x ≤ 1
x-1 ≤ -x → x ≤ 0 → x ≤ 0

D_f = (-∞, 1]

y = sqrt((x-1)/f(x))

→ -1, 2, 3



(x-1)/f(x) ≥ 0 → D_f = (-1, 1] ∪ (2, 3)

D_g1 = D_g2 = R - (2) ریشه های 2 معادله با بزرگی و دو له قوس صفرین ریشه ها نبودن در دامنه در این تابع صفر شدن صفره

$$4n^r - 4n^r - n^r - r - r + 1$$

$$\underbrace{(4n^r - 4n^r + 1)}_{(4n^r - 1)^r} - \underbrace{(n^r - r - r)}_{-(n+r)^r}$$

(5)

$$(4n^r - 1)^r - (n+r)^r \neq 0 \rightarrow 4n^r - 1 \geq n+r \rightarrow$$

$$4n^r - n \geq r \rightarrow 4n^r - n - r \geq 0 \rightarrow$$

$$4n^r - n - r \geq 4n^r + an + b \rightarrow \begin{matrix} a = -1 \\ b = -r \end{matrix} \rightarrow$$

$$\sqrt{-(a+b)} \geq \sqrt{r} \geq r$$

$$f(n) \geq n^r + n \quad y = \sqrt{f(n) - f(\frac{r}{n})} \rightarrow \leftarrow \infty$$

$$f(n) - f(\frac{r}{n}) \geq 0 \rightarrow f(n) \geq f(\frac{r}{n}) \rightarrow$$

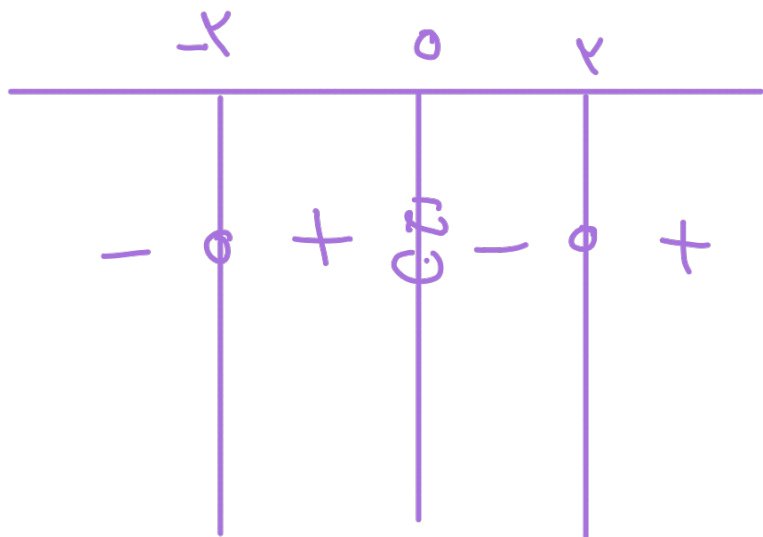
$$n^r + n \geq \frac{r^r}{n^r} + \frac{r}{n} \rightarrow n^r - \frac{r^r}{n^r} \leq n - \frac{r}{n} \rightarrow$$

$$(n - \frac{r}{n})(n^r + \frac{r^r}{n^r} + r) + n - \frac{r}{n} \geq 0 \rightarrow$$

$$n^r + \frac{r^r}{n^r} + r + 1 \geq 0 \rightarrow \underbrace{(n^r + r^r + \omega n^r)}_{\neq 0} (n - \frac{r}{n}) \geq 0$$

$\Delta < 0 \rightarrow +$

$$n - \frac{r}{n} \rightarrow r, -r \rightarrow$$



5)

$$D_f = [-r, 0) \cup [r, +\infty)$$

$$f(n^* + n) = rn^* - 1 \rightarrow f(r) + f(10) = \quad \left. \begin{array}{l} \text{5) } \end{array} \right\leftarrow r$$

$$\left. \begin{array}{l} n^* + n = r \rightarrow n = 1 \rightarrow r \times 1 - 1 = 1 \\ n^* + n = 10 \rightarrow n = r \rightarrow r \times r - 1 = r^2 - 1 \end{array} \right\} \rightarrow f(r) + f(10) = \boxed{1 + r^2 - 1}$$

$$f(n) = n^r - 4n^r + 1rn$$

$$f(\sqrt[r]{r} + r) = (r + 1 + \cancel{r\sqrt[r]{r}} + 1r\sqrt[r]{r}) - 4(\sqrt[r]{r} + \sqrt[r]{r} + \sqrt[r]{r}) + 1r(\sqrt[r]{r} + r) = 10$$

$$g(x) = x^3 + 9x^2 + 40x$$

$$g(\sqrt[3]{10} - 2) = (10 - 20 - 9\sqrt[3]{10} + 4 + 40\sqrt[3]{10}) + 9(\sqrt[3]{10} - 2) + 40(\sqrt[3]{10} - 2)$$

$$+ 40(\sqrt[3]{10} - 2) = 10 - 20 + 20 - 20$$

$$\rightarrow \frac{g(\sqrt[3]{10} - 2)}{f(\sqrt[3]{10} + 2)} = \frac{-20}{10} = -2$$

$$f(x) = \sqrt{(x-1) + 4\sqrt{x-1} + 4} \rightarrow \leftarrow 1$$

$$f(x) = \sqrt{(\sqrt{x-1} + 2)^2} \rightarrow f(x) = |\sqrt{x-1} + 2|$$

$$g(x) = \sqrt{(x-1) - 4\sqrt{x-1} + 4} \rightarrow g(x) = |\sqrt{x-1} - 2|$$

$$f(x) + g(x) = a + b\sqrt{x+c} \rightarrow \textcircled{5}$$

$$\leftarrow x < 1 \rightarrow \sqrt{x-1} + 2 + 2 - \sqrt{x-1} = 4$$

$$\leftarrow x > 1 \rightarrow \sqrt{x-1} + 2 + \sqrt{x-1} - 2 = 0 + 2\sqrt{x-1}$$

$$0 + 2\sqrt{x-1} = a + b\sqrt{x+c} \rightarrow \frac{a+b}{c} = \frac{0+2}{-1} = -\frac{1}{2}$$

$$n^k - \leftarrow n + \leftarrow + 0 \Rightarrow (n-1)(n-3) \neq 0$$

$$\frac{n + \leftarrow}{n^k - \leftarrow n + \leftarrow} \neq 0$$

$$f(2) = -\leftarrow \quad f(0) = \frac{\leftarrow}{2}$$

5

$$g_f = \left\{ (2, -\frac{1}{2}), (0, 9) \right\}$$

$$f(2n) = \left\{ (1/2, 2), (\frac{3}{2}, -1), (2, 2), (-1/2, 9) \right\}$$

$$f(n^2) = \left\{ (1, 2), (\sqrt{3}, -1), (2, 2) \right\}$$

$$2g^r(n) + 1 = \left\{ (-2, 1), (1, 3), (3, 9), (-1, 1) \right\}$$

$$\frac{2f}{g} = \left\{ (1, -\leftarrow), (3, -1) \right\}$$

$$\text{ب 10} \left\{ \begin{array}{l} a^r = 1 \rightarrow a = \pm 1 \\ a^r = 2 \rightarrow a = \pm \sqrt{2} \\ a^r = 3 \rightarrow a = \pm \sqrt{3} \\ a^r = -1 \rightarrow x \end{array} \right. \rightarrow \left\{ (\pm 1, 2) (\pm \sqrt{3}, -1) (\pm \sqrt{2}, 2) \right\}$$

