

$$D_f = [-5, 0] \cup [2, 5]$$

باید هم n هم $f(n)$ در دو هم علامت یا حداقل یکی منفی باشد

$$D_f = (-3, 0) \cup (0, 2)$$

باید $f(n)$ منفی شود و n و $f(n)$ هم علامت نباشند

$$f(2) - 2f(2) = 2^2 - 3 \times 2 + 2$$

$$-f(2) = 2$$

$$f(2) = -2$$

$$f(n) - 2 \times (-2) = n^2 - 3n + 2$$

$$f(n) = n^2 - 3n$$

$$f(-2) = (-2)^2 - 3 \times (-2)$$

$$f(-2) = 10$$

$$f\left(\frac{1}{2}\right) + f\left(\frac{1}{5}\right) = 12$$

$$2 \times 1 + 3 = 5$$

$$5 - \sqrt{5+2} = 2$$

$$2 \times 2 + 3 = 7$$

$$f(n) = \begin{cases} 2 - \sqrt{n+2} & n > 2 \\ 2n+3 & n \leq 2 \end{cases}$$

المسألة

$$f(n-1) = a(n-1)^r - b(n-1) + r$$

$$f(n-1) = an^r - ran + a - bn + b + r$$

$$f(n-1) - f(n) = (an^r - ran + a - bn + b + r) - (an^r + bn - r)$$

$$f(n-1) - f(n) = -ran + b + a$$

$$-ran + b + a = 4n + r$$

$$a = -r \quad b = a$$

$$a - b = -r - a = -1$$

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

$$\frac{r f(r) + f(-1)}{f(r)} = 9$$

$$9 - 9 + 1 = 1$$

$$1 + r + 1 = 9$$

$$r - 9 + 1 = -1$$

$$\frac{r f(r) - r f(-r)}{f(r)} = \frac{r}{r}$$

$$f(n) = \begin{cases} rn + 1 & n > r \\ n^r & n \leq r \end{cases}$$

$$r \times r + 1 = 1r$$

$$(r)^r = r$$

$$r \times r + 1 = r$$

$$\frac{f(f(r)) - f(f(r))}{f(1) - r} = \frac{0}{r} = 0$$

$$f(f(\sqrt{r}-r)) =$$

$$\frac{(\sqrt{r}-r)^r + r \times (\sqrt{r}-r) + 9}{(\sqrt{r}-r)^r + r \times (\sqrt{r}-r) + 9} = \frac{r+r - r\sqrt{r} + r\sqrt{r} - 1 + 9}{r+r - r\sqrt{r} + r\sqrt{r} - 1 + 9} = \frac{1}{r} = r$$

$$f(r) = \frac{r^2 + r \times r + 9}{r^2 + r \times r + 9} = \frac{r}{1}$$

$$f(\sqrt{n}) = n + \frac{1}{n}$$

$$(n + \frac{1}{n})^2 = n^2 + \frac{1}{n^2} + 2 = n + \frac{1}{n}$$

$$n^2 + \frac{1}{n^2} + 2 - n^2 - \frac{1}{n^2} = 2$$