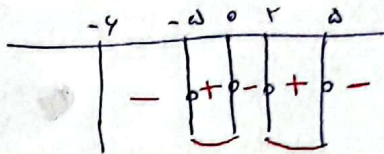


شماره $f(n)$ در $x = -5$ و $x = 5$ منفرجه شود.

$$y = \sqrt{x f(n)} \gg 0 \rightarrow x f(n) \gg 0$$

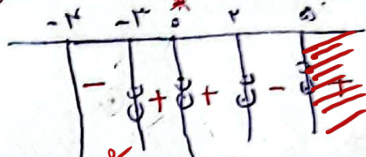


$$D_f = [-5, 0] \cup [2, 5]$$

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شماره $f(n)$ و x باید مختلف علامت باشند تا زیر رادیکال مثبت شود و در ناحیه $x < 0$ مثبت باشد.

$$y = \sqrt{\frac{-x}{f(n)}} \gg 0 \rightarrow \frac{-x}{f(n)} \gg 0$$



$$D_f = (-4, 0) \cup (0, 2) \cup (5, \infty)$$

تعداد اعداد صحیح در این فضاها ۱

بعد از ۵ تابع $f(n)$ اصل تعریف نمی‌شود!

۲

$$f(n) - 2f(2) = n^2 - 2n + 4 \rightarrow f(n) = n^2 - 2n + 4 + 2f(2)$$

$$f(2) = 2^2 - 2 \cdot 2 + 4 + 2f(2) \rightarrow f(2) = 4 - 4 + 4 + 2f(2) \rightarrow -f(2) = 4 \rightarrow f(2) = -4$$

$$f(n) = n^2 - 2n + 4 - 4 \rightarrow f(n) = n^2 - 2n \rightarrow f(-2) = (-2)^2 - 2(-2) = 4 + 4 = 8$$

۳

$$f(f(5)) + f(f(1))$$

$$f(n) = \begin{cases} n - \sqrt{n+4} & ; n \geq 4 \\ 2n+3 & ; n < 4 \end{cases}$$

$$f(1) = 2 \cdot 1 + 3 = 5 \rightarrow f(5) = 5 - \sqrt{5+4} = 5 - 3 = 2$$

$$f(2) = 2 \cdot 2 + 3 = 7$$

$$f(5) = 5 - \sqrt{5+4} = 2$$

$$f(2) = 7$$

$$7 + 7 = 14$$

۴

$$f(n) = an^2 - bn + 2$$

$$f(n-1) - f(n) = 4n+2$$

$$a-b=?$$

$$f(n-1) = a(n-1)^2 - b(n-1) + 2 = an^2 - 2an + a - bn + b + 2$$

$$an^2 - 2an + a - bn + b + 2 - (an^2 - bn + 2) = 4n + 2$$

$$-2a + a - b + b + 2 - 2 = 4n + 2 \rightarrow -a = 4n + 2 \rightarrow a = -4n - 2$$

$$a + b = 2 \rightarrow -4n - 2 + b = 2 \rightarrow b = 4n + 4$$

$$a - b = -4n - 2 - (4n + 4) = -8n - 6$$

مجموع

$$f(n) = \frac{n^2 + 2n + 5}{n^2 + 4n + 6}$$

$$f(\sqrt{3}-2) = ?$$

$$(x^2 + 4x + 6) - 2 = (x+2)^2 - 2$$

$$f(n) = \frac{(n+2)^2 - 2 + 5}{(n+2)^2 - 2 + 6} = \frac{(n+2)^2 + 3}{(n+2)^2 + 4}$$

$$\rightarrow f(\sqrt{3}-2) = \frac{(\sqrt{3}-2+2)^2 + 3}{(\sqrt{3}-2+2)^2 + 4} = \frac{3+3}{4+4} = \frac{6}{8} = \frac{3}{4}$$

$$\frac{3+1}{3+3} = \frac{4}{6} = \frac{2}{3}$$

۵

کلاس : دختر دهم

بابت تشریحی نمره : ۷

نام خانوادگی : آلاء ساهیری

$$f(x - \frac{1}{n}) = \frac{x^r + 1}{x^r} \rightarrow \frac{x^r}{x^r} + \frac{1}{x^r} = x^r + \frac{1}{x^r} \rightarrow f(n - \frac{1}{n}) = x^r + \frac{1}{x^r}$$

$$(x - \frac{1}{n})^r = x^r + \frac{1}{x^r} - r \rightarrow x^r + \frac{1}{x^r} - r + r = x^r + \frac{1}{x^r} + r \rightarrow f(\underbrace{x - \frac{1}{n}}_a) = (\underbrace{x - \frac{1}{n}}_a)^r + r$$

$$f(a) = a^r + r \rightarrow f(3) = (3)^r + r \rightarrow f(-2) = 9 + 2 = 11 \text{ جواب}$$

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$$g(x) = \sqrt{9 - x^2}, \quad f(x) = \{(2, 0), (1, -2), (0, 2), (3, 2)\}$$

$$g(x) = \{(2, \sqrt{5}), (1, \sqrt{8}), (0, 3)\}$$

$$\frac{f}{g} = \{(2, \frac{0}{\sqrt{5}}), (1, \frac{-2}{\sqrt{8}}), (0, \frac{2}{3})\}$$

$$\frac{g}{f} = \{(2, \frac{\sqrt{5}}{0}), (1, \frac{\sqrt{8}}{-2}), (0, \frac{3}{2})\}$$

۵

الف) $\frac{f}{g}$

ب) $\frac{g}{f}$

$$f(x) = \{(2, 0), (1, -2), (0, 2), (3, 2)\}$$

$$f(x) + 1 = \{(2, 1), (1, -1), (-5, 3), (3, 5)\}$$

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$$3f^2(x) + 1 = f^2(x) = \{(2, 1), (3, 12), (-5, 4), (1, 4)\}$$

۹

$$3f^2(x) = \{(2, 3), (3, 12), (-5, 12), (1, 12)\}$$

$$3f^2(x) + 1 = \{(2, 4), (3, 13), (-5, 13), (1, 13)\}$$

$$f(2x) = \{(1, 1), (\frac{3}{2}, 4), (-\frac{5}{2}, 4), (\frac{1}{2}, -4)\}$$

$$f(x) = \{(2, 2), (5, 2), (1, 4), (3, 1), (5, 2)\}, \quad g(x) = \{(1, 0), (2, 1), (-1, 4), (-2, -3), (3, -1)\}$$

$$f - g = \{(1, 4), (2, 2), (3, 2)\}$$

۵

$$\frac{f}{g} = \{(2, 6), (1, \frac{1}{0}), (3, -2)\}$$

$$2f = \{(2, 4), (5, 4), (1, 8), (3, 2), (5, 4)\}$$

۱۰