

سست راست محور ها مثبت x → مرد مثبت یا منفی: حالت اول → $x f(x) > 0$ ؟ $y = \sqrt{x f(x)}$ دامنه

مرد منفی یا منفی: حالت دوم

ست پب محور ها → منفی x $f(x) < 0$ $[0, 5]$ $f(x) = 0$ مثبت x $f(x) > 0$ $[2, 5]$ باید دانی محور ها باشد

بواب $D_f = [-5, 0] \cup [2, 5]$

$y = \sqrt{\frac{-x}{f(x)}}$ $\frac{-x}{f(x)} > 0$ حالت اول: مثبت x $f(x) < 0$ $[0, 2]$ $(0, 2)$ $f(x) = 0$ منفی x $f(x) > 0$ $[0, 2]$ $(0, 2)$

حالت دوم: منفی x $f(x) < 0$ $[0, -3]$ $(0, -3)$ $f(x) = 0$ مثبت x $f(x) > 0$ $[0, -3]$ $(0, -3)$

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

تعداد اعداد صحیح $\{-2, -1, 1\} = 3$

$f(x) - 2f(2) = x^2 - 3x + 4$

$f(-2) = ?$

$x = 2 \rightarrow f(2) - 2f(2) = 4 - 6 + 4 \rightarrow f(2) + 4 = 2 \rightarrow f(2) = -2$

$x = -2 \rightarrow f(-2) - 2f(2) = 4 - 6 + 4 \rightarrow f(-2) + 4 = 2 \rightarrow f(-2) = -2$

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

$x - \sqrt{x+4} > 3$

$2x + 3 < 3$

$f(f(5)) + f(f(1)) = ?$

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

$f(f(5)) \rightarrow x = 2 \rightarrow 2 \times 2 + 3 = 7$

$f(1) \rightarrow x = 1 \rightarrow 1 \times 1 + 3 = 4$

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

بواب $7 + 2 = 9$

$f(x) = ax^2 - bx + r$

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

$a - b = ?$

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

$f(n-1) - f(n) \rightarrow an^2 + a - 2an - bn + b + r - an^2 + bn - r = -2an + a + b = 4n + r$

$-2a = 4 \rightarrow a = -2$

$a + b = r$

$-2 + b = r \rightarrow b = r + 2$

$a - b = -2 - (r + 2) = -4 - r$

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

$$r f(r) + f(-1)$$

$$f'(r)$$

$$r f(r) = r (9 - r \times r + 1) = r$$

$$f(-1) = (-1)^r - r(-1) + 1 = 0$$

$$f'(r) = (r - 4 + 1)^r = (-1)^{r-1}$$

$$\rightarrow \frac{r+0}{1} = \boxed{r}$$

6

$$f(n) = \begin{cases} r n + 1 & n \geq r \\ n^r & n < r \end{cases}$$

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

$$r f(r) \rightarrow r (r(r) + 1) = r \times 1r = r^2$$

$$-r f(-r) \rightarrow -r (-r)^r = -r \times r = -r^2$$

$$f(r) \rightarrow r \times r + 1 = r^2 + 1$$

$$\rightarrow \frac{r^2 - r^2}{r^2 + 1} = \boxed{0}$$

7

$$f = \{(r, r), (r, r), (r, r), (r, r)\}$$

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

$$f(r) = 1 \rightarrow f(1) = r$$

$$\frac{r - r}{r} = \boxed{0}$$

$$f(r) = r \rightarrow f(r) = r$$

$$f(1) = r \rightarrow f(1) = r$$

8

$$f(n) = \frac{n^r + r n + 9}{n^r + r n + 9}$$

$$f(f(\sqrt{r} - r)) = 9$$

$$f(\sqrt{r} - r) \rightarrow (\sqrt{r} - r)^r + r(\sqrt{r} - r) + 9 = \frac{r + r - \sqrt{r} + \sqrt{r} - 1 + 9}{r + r - \sqrt{r} + \sqrt{r} - 1 + 9} = 1 \rightarrow \boxed{1}$$

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

9

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

$$(f(\sqrt{n}))^r - f(n) = ? \rightarrow \left(n^r + \frac{1}{n^r}\right)^r + r - n^r - \frac{1}{n^r} = \boxed{r}$$

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

$$(f(\sqrt{n}))^r = \left(n + \frac{1}{n}\right)^r = n^r + \frac{1}{n^r} + r$$

10