

$y = f(x)$ $y = \sqrt{x f(x)} \rightarrow$ ؟ مساوی $D_f = [-9, 5]$

$x f(x) \geq 0$ $x f(x) \geq 0$

جواب: $D_f = [-5, 1] \cup [2, 5]$

جواب منفی x $x f(x) < 0$ $x f(x) < 0$

جواب مثبت x $x f(x) > 0$ $x f(x) > 0$

$y = \sqrt{\frac{-x}{f(x)}} \rightarrow$ ؟ غیر عدد صحیح $\frac{-x}{f(x)} \geq 0$, $f(x) \neq 0$

جواب: $D_f = (-3, 0] \cup [1, 2)$

جواب منفی x $x f(x) < 0$ $x f(x) < 0$

جواب مثبت x $x f(x) > 0$ $x f(x) > 0$

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

$\Rightarrow f(2) - 2f(2) = (2)^2 - 2(2) + 4 \Rightarrow -f(2) = 2 \Rightarrow f(2) = -2$

$\Rightarrow f(-2) - 2f(2) = (-2)^2 - 2(-2) + 4 \Rightarrow f(-2) = 10$

$f(x) = \begin{cases} x - \sqrt{x+4} & x > 3 \\ 2x+3 & x \leq 3 \end{cases}$

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

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

$f(1) \Rightarrow 2(1)+3 = 5$

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

$f(f(4)) + f(f(1)) = 9$

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

$f(x-1) = a(x-1)^2 - b(x-1) + 2 \Rightarrow f(x-1) = ax^2 - 2ax + a - bx + b + 2$

$f(x-1) - f(x) = 4x + 2 \Rightarrow (ax^2 - 2ax + a - bx + b + 2) - (ax^2 - bx + 2) = 4x + 2$

$\Rightarrow -2ax + a + b = 4x + 2 \Rightarrow a = -2/b = -1 \Rightarrow a - b = -1$

$$f(x) = x^r \cdot x^r + 1$$

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

$$\Rightarrow f(r) = (r)^r \cdot r^r + 1 = 1$$

$$\Rightarrow f(-1) = (-1)^r \cdot r^r + 1 = 1$$

$$\Rightarrow f(r) = (r)^r \cdot r^r + 1 = -1$$

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

$$\Rightarrow f(r) = r(r) + 1 = 1r$$

$$\Rightarrow f(-r) = (-r)^r = r$$

$$\Rightarrow f(r) = r(r) + 1 = r$$

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

$$f = \{(r, r), (r, r), (r, 1), (1, r)\}$$

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

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$$f(x) = \frac{x^r + r x + 1}{x^r + r x + 1} \Rightarrow \frac{(x+r)^r + 1}{(x+r)^r + 1} \Rightarrow \frac{(\sqrt{r})^r + 1}{(\sqrt{r})^r + 1} = \frac{1}{r} = r$$

$$f(f(\sqrt{r}-r)) \Rightarrow f(r) \Rightarrow \frac{(r)^r + 1}{(r)^r + 1} = \frac{r}{r}$$

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$$f(x) = x^r + \frac{1}{x^r} \Rightarrow f(\sqrt{x}) = (\sqrt{x})^r + \frac{1}{(\sqrt{x})^r} = x + \frac{1}{x} \Rightarrow (x + \frac{1}{x})^r = x^r + \frac{1}{x^r}$$

$$(f(\sqrt{x}))^r - f(x) = (x^r + \frac{1}{x^r}) - (x^r + \frac{1}{x^r}) = 0$$

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