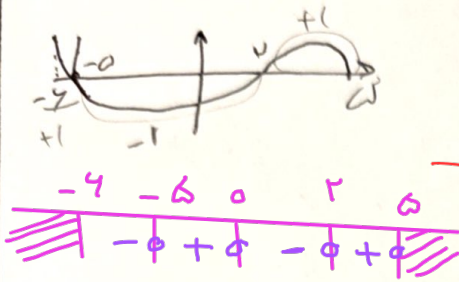


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$$y = \sqrt{x f(x)}$$



$$[2, 5]$$

$$[-5, 0]$$

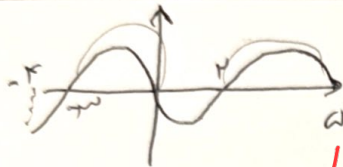
خارج از فرم خود
چاپ نمی گردد

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

$$x \neq 0$$

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

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$$y = \sqrt{\frac{-x}{f(x)}}$$

$$\rightarrow (-3, 0) \cup (0, 2)$$

حالت اول: $f(x) < 0, x > 0$

حالت دوم: $f(x) > 0, x < 0$

$$f(x) \neq 0 \rightarrow x > 0 \rightarrow f(x) < 0$$

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$$D_f = (-3, 2) - \{0\}$$

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

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

$$\frac{f(-2) - f(2)}{-2} = 1$$

$$f'(2) = -1$$

(۲) ✓

$$f(x) - 2f(2) =$$

$$x^2 - 2x + 2$$

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

$$f(-2) = 1, f(2) = 1$$

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$$x < 0$$

$$f(0) = 0 - \sqrt{0+2} = -\sqrt{2}$$

$$f(f(0)) = f(-\sqrt{2})$$

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

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

$$f(f(1)) = f(4) = 2(4) + 2 = 10$$

$$2+2=4$$

(۲) ✓

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

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

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

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

$$\rightarrow -2an + a + b$$

$$-2a = 4$$

$$a + b = 2$$

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

$$a - b = -2 - 4 = -6$$

۵

$$\frac{v f(v) + f(1)}{f(v)^v}$$

$$f(v) = v^v - v(v) + 1 = v - v + 1 = 1$$

1, 2

$$f(w) = w^w - w(w) + 1 = 9 - 9 + 1 = 1$$

$$\frac{v(1) + 1}{(-1)^v} = \frac{v}{(-1)} \rightarrow + \checkmark$$

$$f(-1) = -1^v - v(-1) + 1 = -1 + v + 1 = v$$

6

$$\frac{w f(v) - v f(-v)}{f(v)}$$

$$v \leq v$$

$$f(v) = w(v) + 1 = v$$

$$f(-v) = v - v = 0$$

$$f(v) = w(v) + 1 = v$$

2 ✓

$$\frac{w f(v) - v f(-v)}{v} = \frac{wv - 1}{v} = \frac{v-1}{v}$$

$$\frac{f(f(v)) - f(f(-v))}{f(v) - v}$$

$$= \frac{v - v}{v - v} = \frac{0}{0} \rightarrow \text{0}$$

2 ✓

7

8

$$f(n) = \frac{n^v + f(n) + 9}{n^v + f(n) + 9} \rightarrow (n+v)^v + 1 = f(f(\sqrt{v} - v)) = ?$$

$$n = \sqrt{v} - v$$

$$\rightarrow (\sqrt{v} - v)^v + 1 = v + 1 = f$$

$$(\sqrt{v})^v + 1 \rightarrow 1$$

2 ✓

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

$$\frac{1}{v} = v \rightarrow f(n) = v$$

9

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

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

2 ✓

$$f(n) = n^v \frac{1}{n^v} \rightarrow \left(\frac{n^v + 1}{n^v} \right) - \left(\frac{n^v + 1}{n^v} \right)$$

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