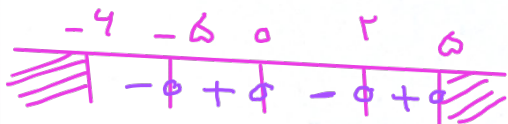


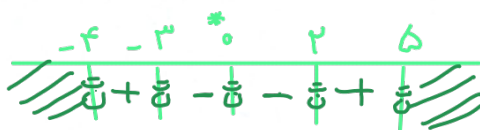
$$y = \sqrt{x f(x)} \geq 0 \rightarrow D = [-5, 0] \cup [2, 5] \cup \{0\}$$



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$$\sqrt{\frac{-x}{f(x)}} \geq 0 \rightarrow f(x) \neq 0$$



$$D = (0, 2) \cup (-5, 0) \rightarrow \text{اعدد صحیح } \{-2, -1, 0, 1\}$$

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$$f(-2) \rightarrow f(-2) - 2f(2) = 14$$

$$f(-2) + 2 = 14 \rightarrow f(-2) = 12$$

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

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$$f(f(5)) + f(f(1)) = ? \rightarrow f(\underbrace{f(5)}_2) + f(\underbrace{f(1)}_5) = f(2) + f(5) \xrightarrow{f(2)=2(2)+3=7}$$

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

$$f(2) = 2 + \sqrt{2} = 3$$

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

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

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

$$f(x-1) - f(x) = ax^2 - 2ax + a - bx + b + 2 - (ax^2 - bx + 2) = -2ax + a + b = 9x + 2$$

$$a = -3 \quad -3 + b = 2$$

$$a - b = -3 - 5 = -8$$

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$$b = 5$$

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$$f(x) = x^r - 1, x \neq -1 \quad \frac{r f(r) + f(-1)}{f'(r)}$$

$$f(r) = 1$$

$$f(-1) = 0$$

$$f(r) = -1$$

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

(C) ✓

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

$$\frac{(3 \times 1^3) - (2 \times 4)}{1} = \frac{3 \times 9 - 8}{1} = \frac{19}{1}$$

Y

$$f(r) = 1^r$$

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

$$f(r) = 1$$

(C) ✓

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

$$f(1) = 1$$

1, 2

$$\begin{aligned} & 1 \xrightarrow{f} 1 \xrightarrow{f} 1 \rightarrow f(f(1)) = 1 \\ & 4 \xrightarrow{f} 1 \xrightarrow{f} 1 \rightarrow f(f(4)) = 1 \\ & 1 \xrightarrow{f} 4 \xrightarrow{f} 4 \rightarrow f(f(1)) = 4 \\ & 4 \xrightarrow{f} 4 \xrightarrow{f} 4 \rightarrow f(f(4)) = 4 \end{aligned}$$

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

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

$$f(\sqrt{r}) = \frac{r + 1}{r + 1} + 1 = 2$$

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

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

(C) ✓

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

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

(C) ✓

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