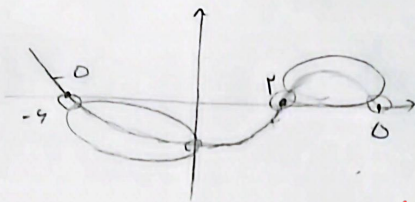


پاسخنامه

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

$$x \leq 0$$

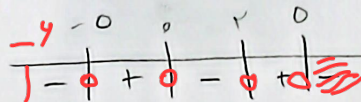
$$f(x) = 0 \rightarrow x = -5, 2, 5$$



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

با توجه به نمودار

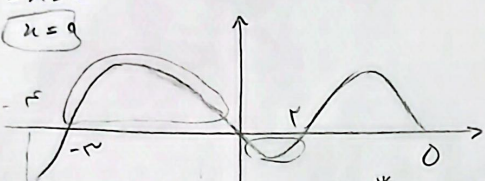
(۲) ✓



۱

$$\frac{-x}{f(x)} \geq 0 \quad x \leq 0$$

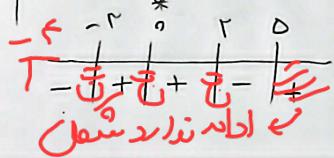
$$f(x) = 0 \rightarrow x = -3, 0, 2, 5$$



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

با توجه به نمودار

(۲)



(۱), (۲), (۳)

۲

$$f(-2) - 2f(2) = 5 + 4 + 5$$

$$f(2) - 2f(2) = 5 - 4 + 5$$

$$f(-2) = 15 + 2f(2)$$

$$-f(2) = 2$$

$$f(2) = -2$$

$$f(-2) = 15$$

(۲) ✓

۳

$$f(f(0)) + f(f(1)) = 9$$

$$0 < 2 \rightarrow 0 - \sqrt{0+4} = 2$$

$$1 \leq 2 \rightarrow 2(1) + 2 \leq 0$$

$$2 \leq 2 \rightarrow 2(2) + 2 \leq 5$$

$$0 > 2 \rightarrow 0 - \sqrt{0+4} \leq 2$$

(۲) ✓

۴

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

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

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

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

$$a + 2an + b \leq 4n + 2$$

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

$$a + b \leq 2 \rightarrow b \leq 0$$

$$a - b \leq -2 - 0 \leq -1 \rightarrow$$

(۲) ✓

۵

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

6

Ⓟ ✓

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

7

Ⓟ ✓

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

8

Ⓟ ✓

$$\frac{r + r - r(\sqrt{r}) + r\sqrt{r} - \lambda + q}{(\sqrt{r}-r)^r + r(\sqrt{r}-r) + q} = \frac{\lambda}{r} = r$$

$$\frac{(r + r - r\sqrt{r} + r\sqrt{r} - \lambda + 0)}{r + r - r\sqrt{r} + r\sqrt{r} - \lambda + 0}$$

$$\frac{r^1 + r^1 + q}{(r)^r + r(r) + 0} = \frac{r^1}{r} = \underline{\underline{r}}$$

9

Ⓟ ✓

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

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

Ⓟ ✓

10