

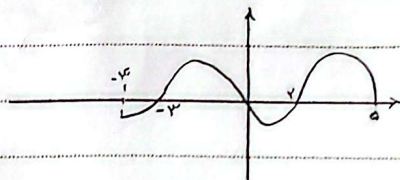
$$\begin{cases} x > 0 \\ f(x) > 0 \\ \downarrow \\ [1, 5] \end{cases}$$

$$\begin{cases} x < 0 \\ f(x) < 0 \\ \downarrow \\ [-5, 0] \end{cases}$$

منحنی

(1)

$$D_f = [1, 5] \cup [-5, 0]$$



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

$f(x) \neq 0$

$$\begin{cases} x > 0 \\ f(x) < 0 \end{cases} \rightarrow (0, 1)$$

(2)

$$\begin{cases} x < 0 \\ f(x) > 0 \end{cases} \rightarrow (-3, 0)$$

$$D_f = (-3, 0) \cup (0, 1)$$

$$f(x) - 2f(1) = x^2 - 3x + 2$$

اول $f(1)$ را جایگذاری می‌کنیم.

(3)

$$f(1) - 2f(1) = 1 - 6 + 2 \rightarrow -f(1) = 1$$

$$f(1) = -1$$

حالا بر اساس $f(1) = -1$ و $f(-1)$ پیدا می‌کنیم.

$$f(-1) + 1 = 1 + 6 + 2$$

$$f(-1) = 10$$

$$f(x) = \begin{cases} x - \sqrt{x+1} & x > 3 \\ 2x+3 & x \leq 3 \end{cases}$$

$$f(5) = 5 - \sqrt{6} = 2 \rightarrow f(f(5)) = f(2) = 7$$

(4)

$$f(1) = 2 + 3 = 5 \rightarrow f(f(1)) = f(5) = 5 - \sqrt{6} = 2$$

$$\text{پس } 5 + 2 = 7$$

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

(5)

$$a(x-1)^2 - b(x-1) + 2$$

3x-1 جایگذاری

$$f(x-1) - f(x) = 5x+2$$

$$ax^2 + a - 2ax - b + b + 2$$

$$ax^2 + a - 2ax - b + 2 - ax^2 - bx + 2 = 5x + 2$$

$$-2a = 5$$

$$a = -\frac{5}{2}$$

برایابی معادله را
پیدا می‌کنیم.

$$a+b=2$$

$$b=5$$

$$a-b = -\frac{5}{2} - 5 = -\frac{15}{2}$$

$$f(x) = \frac{(x+2)^2 + 1}{(x+2)^2 + 3}$$

$$f(\sqrt{3}-2) = \frac{(\sqrt{3}-2+2)^2 + 1}{(\sqrt{3}-2+2)^2 + 3} = \frac{3+1}{3+3} = \frac{4}{6} = \frac{2}{3} \quad \text{جاءه في } \sqrt{3}-2 \quad (6)$$

$$f(x - \frac{1}{x}) = f(-3) \rightarrow x - \frac{1}{x} = -3$$

$$\frac{x^2 - 1}{x} = -3 \rightarrow x^2 = 1 - 3x$$

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

$$\frac{1 + 9x^2 - 3x}{1 - 3x} = \frac{1 + 9 - 3^2 x + 1}{1 - 3x} = \frac{11 - 3^2 x}{1 - 3x} = \frac{11(1 - 3x)}{1 - 3x} = 11$$

$$f(x) = \{(2, 0), (1, -4), (0, 3), (7, 1)\}$$

$$g(x) = \{(2, \sqrt{2}), (1, \sqrt{3}), (0, 3)\}$$

$$\frac{f}{g} = \{(2, 0), (1, \frac{-4}{\sqrt{3}}), (0, \frac{3}{3})\} \quad \text{النقطة (أ)}$$

$$\frac{g}{f} = \{(1, \frac{\sqrt{3}}{-4}), (0, \frac{3}{3})\} \quad \text{ب.}$$

$$\{(2, 2), (3, 8), (-5, 4), (1, -4)\} \quad \text{النقطة (ب.)} \quad \{(2, 2), (3, 8), (-5, 4), (1, -4)\} \quad \text{النقطة (ج.)}$$

$$\{(1, 1), (\frac{3}{4}, 4), (\frac{-5}{4}, 2), (\frac{1}{4}, -2)\} \quad \text{النقطة (د.)} \quad \{(2, 2), (3, 8), (-5, 4), (1, -4)\} \quad \text{النقطة (هـ.)}$$

$$\{(2, 2), (1, 4), (3, 2)\} \quad \text{النقطة (و.)}$$

$$f \cdot g = \{(2, 6), (7, 4), (1, 8), (3, 2), (5, 4)\} \quad \text{النقطة (ز.)} \quad \{(2, 6), (3, -2)\} \quad \text{النقطة (ح.)}$$

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