

$$\frac{f(x) - f(1)}{x - 1} = f' \Rightarrow \frac{(1 - \frac{a}{x}) - (1 - a)}{x} = \frac{a}{x^2} \quad (1)$$

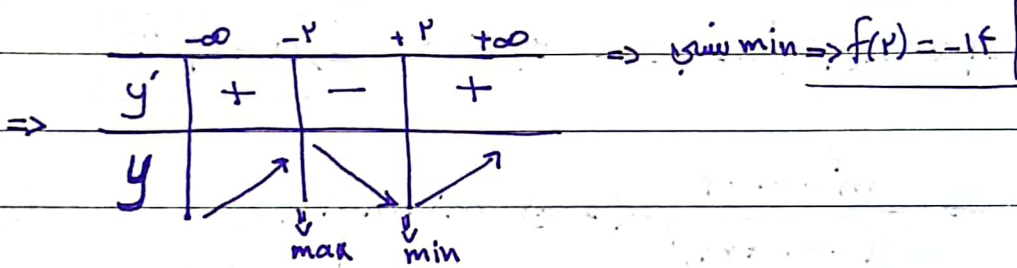
$$\frac{\frac{a}{x}}{x} = \frac{a}{x^2} \Rightarrow \frac{1}{x^2} = \frac{1}{x^2} \Rightarrow \boxed{x = \pm \sqrt{x^2}}$$

$$2ax^2 - \omega x + 11a = 0 \Rightarrow 2ax^2 - 4x + 11a = 0 \quad (2)$$

$$\Delta = 0 \Rightarrow 9 - 4(a)(11a) = 0 \Rightarrow 9 - 44a^2 = 0 \Rightarrow a = \pm \frac{1}{\sqrt{44}}$$

$$\boxed{a = -\frac{1}{\sqrt{44}}} \leftarrow \text{Cusps } A \text{ و } B \text{ في } x = \pm \frac{1}{\sqrt{44}}$$

$$y' = 2x^2 - 12 \rightarrow y' = 0 \Rightarrow 2x^2 - 12 = 0 \Rightarrow x = \pm \sqrt{6} \quad (3)$$

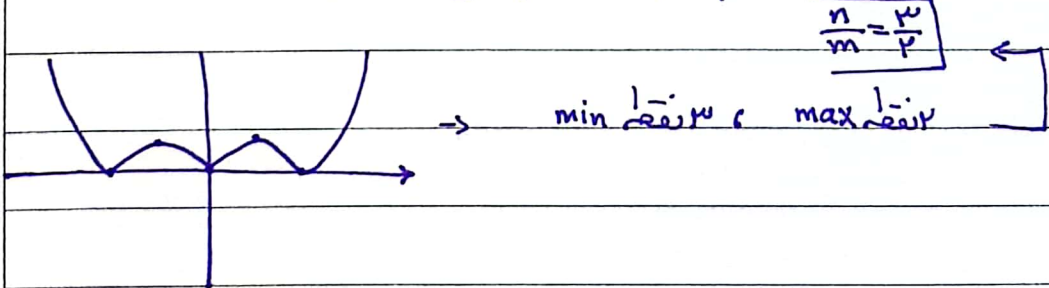


$$y' = 2x^2 + 2ax - 12 = 0 \rightarrow x = 0 \rightarrow b = 0 \text{ و } x = -2 \rightarrow a = 3 \quad (4)$$

$$\rightarrow \text{EXT: } A(0, -12), B(-2, 0) \Rightarrow AB = \sqrt{(-2)^2 + (12)^2} = \sqrt{148} = \sqrt{4 \cdot 37} = 2\sqrt{37}$$

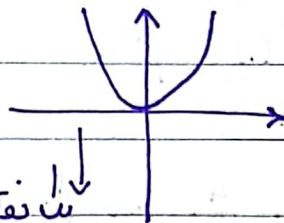
الطول  $\sqrt{148}$

$$f(x) = |2x^2 - a|x| \rightarrow y = |2x^2 - a|x| \quad (5)$$



$$|n(n+m)| = |n^2 + mn| \rightarrow n > 0$$

$$|n(-n+m)| = |-n^2 + mn| \rightarrow n < 0$$



(۶)

در این بازه، نقطه حقیقی است  $[0, a]$

$$f'(n) = \frac{2n}{\sqrt[3]{2n^2}} \times (a-n) - \sqrt[3]{2n^2} = 0$$

$$n = \frac{1}{2}a \rightarrow \left( \frac{2}{\sqrt[3]{2 \left(\frac{1}{2}a\right)^2}} \left(a - \frac{1}{2}a\right) - \sqrt[3]{2 \left(\frac{1}{2}a\right)^2} = 0 \right) \times \sqrt[3]{\frac{1}{2}a^2}$$

$$= (a - \frac{1}{2}a) - \left(\frac{1}{2}a\right)^{\frac{2}{3}} = 0 \Rightarrow a - \frac{2}{3}a = 0 \Rightarrow \boxed{a = \frac{3}{2}a}$$

$$y' < 0 \rightarrow \frac{m^2 - m - 2}{(n-1+m)^2} < 0 \Rightarrow m^2 - m - 2 < 0$$

ریشه ها:  $-1, 2$



در بازه  $(-1, 2)$  نزولی است

$m = 0, 1$  → به ازای مقدار صحیح برای  $m$

(۹)