

Subject:

کارنامه پورسیری = تکالیف ۲۵

Year. Month. Date. ()

$$\textcircled{1} \frac{f(x) - f(1)}{x} = \frac{1 - \frac{a}{x} - 1 + a}{x}$$

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

$$\textcircled{2} (x, y) \rightarrow y < 0 \Rightarrow y = 2ax^2 - ax + 1 \wedge a$$

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

$$\boxed{a = -\frac{1}{4}} \text{ جواب}$$

$$\left\{ \begin{aligned} x &= x \times \frac{x}{2a} - ax + 1 \times \frac{x}{2a} \geq x \Rightarrow \frac{x^2}{2a} = \frac{x^2}{a} \Rightarrow x^2 = 9 \Rightarrow x = -3 \end{aligned} \right.$$

$$\textcircled{3} y = 3x^2 - 12 \dots a = \pm 2 \quad \frac{-2}{2} = \frac{2}{2} \quad y = 1 - 2 \times 2 + 2 = \boxed{-14} \text{ - جواب}$$

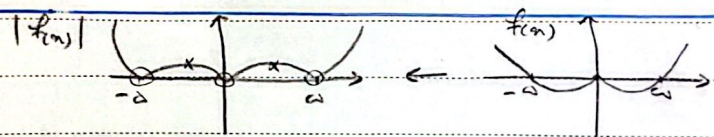
$$\textcircled{4} y' = 3ax^2 + 2ax - 2b = 0 \quad a = 0 \rightarrow b = 0$$

$$\boxed{a = -2, 12 = 2a \rightarrow a = 6}$$

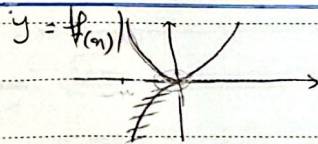
$$f(a) = -6 \quad f(-2) = -1 + 12 - 6 = 5 \quad (a, -6) \quad (-2, 5) \Rightarrow \sqrt{5 + 14} = \boxed{2\sqrt{9}}$$

$$\textcircled{5} f(x) = |a| (|a| - a)$$

$$m = 2 \quad n = 3 \Rightarrow \frac{n}{m} = \boxed{\frac{3}{2}}$$



$$\textcircled{6} f(x) = x(|a| + a) \quad \begin{cases} x > 0 \rightarrow a^2 + ca \\ x < 0 \rightarrow -x^2 + 3ax \end{cases}$$



که فقط مجزایی دارد.

$$\textcircled{7} x > a \Rightarrow a^{\frac{x}{a}} (x - a) = a^{\frac{x}{a}} - a x^{\frac{x}{a}} \Rightarrow f'(x) = \frac{a}{x} a^{\frac{x}{a}} - \frac{x}{a} a x^{-\frac{1}{a}}$$

$$\downarrow a^{\frac{x}{a}} \left(\frac{a}{x} a^{\frac{x}{a}} - \frac{x}{a} a \right) = 0 \quad a = \frac{x}{a} a$$

$$\frac{x}{a} = \sqrt{\frac{a}{x}} a^{\frac{x}{a}} \times \frac{x}{a} a \Rightarrow \frac{a}{x} = \sqrt{\frac{a}{x}} a^{\frac{x}{a}} \Rightarrow \frac{1}{x} = \frac{a^{\frac{x}{a}}}{\sqrt{x}} \Rightarrow a^{\frac{x}{a}} = \sqrt{x}$$

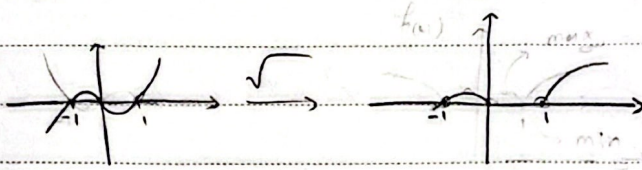
$$\boxed{a = \frac{a}{x}} \text{ جواب}$$

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① $f(x) = \sqrt{x|x-1|}$

$u(|x-1|)$



نقطه بحرانی $K = 4$

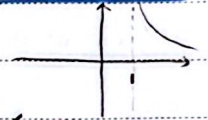
$m = 1$ $n = 0$

$\frac{K m + n}{K - n} = \frac{4}{4} = 1$ جواب

② $f'(x) = \frac{m(m-1) - x}{(x-1+m)^2} = 0 \Rightarrow m^2 - m - x = 0$
 $(m-x)(m+1) = 0$

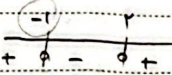
I: $x \geq 1$ بی مزاج

II: $x > 0$ صورتی



I: $1-m < 1 \Rightarrow 0 < m$

II: $m^2 - m - x < 0$



$-1 < m < 2 \Rightarrow I \cap II : 0 < m < 2 \rightarrow 0$

در این دو مورد صفر

③ $f(x) = \frac{x}{1-x^2}$ $f(x) = \frac{x}{1-x^2} = 0 \Rightarrow x = 0$
 $f(x) = \frac{x}{1-x^2} = 0 \Rightarrow x = 1$ (not in domain)
 $f(x) = \frac{x}{1-x^2} = 0 \Rightarrow x = -1$ (in domain) $\in D_f$

یک نقطه بحرانی دارد