نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۵ کلاس .....

۱

$$\frac{f(3)-f(1)}{2} = \frac{\frac{9a}{3}}{2} = \frac{a}{3} \qquad f'(x) = \frac{a}{x^2}$$

$$\frac{a}{x^2} = \frac{a}{3} \Rightarrow x = \pm\sqrt{3}$$

۲

$y' = 4ax - 5$ — عبارت داده شده $\to y = x$ $x < 0$ — $4ax - 5 = 1$

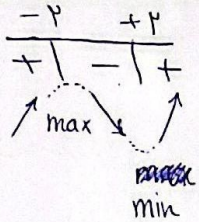
$$x = \frac{3}{2a}$$

$$2a \times \frac{9}{4a^2} - 5 \times \frac{3}{2a} + 18a = \frac{3}{2a} \Rightarrow \frac{9}{2a} = 18a \Rightarrow 9 = 36a^2$$

$$\Rightarrow a = \pm\frac{1}{2} \rightsquigarrow \frac{3}{2a} < 0 \Rightarrow a = \frac{-1}{2}$$

۳

$3x^2 - 12 \Rightarrow x^2 - 4 = 0$



$y(2) = -14$

۴

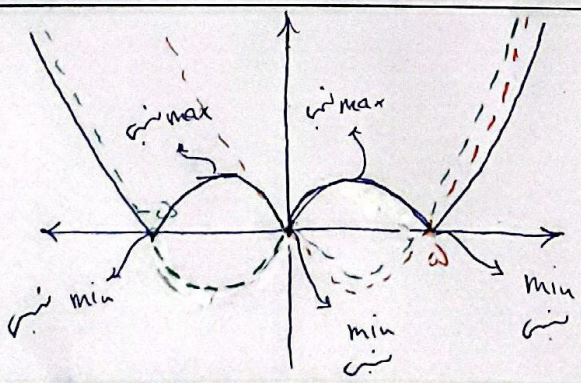
$y' = 3x^2 + 2ax - 2b \Rightarrow -2b = 0 \Rightarrow b = 0$

$12 - 4a = 0 \Rightarrow a = 3$ $\qquad (0,-4), (2,0)$

$$\sqrt{4 + 16} = 2\sqrt{5}$$

۵

$|x^2 - 5|x||$



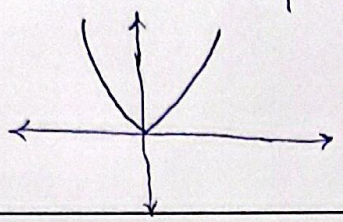
$m = 2$

$n = 3$

$\frac{n}{m} = \frac{3}{2}$

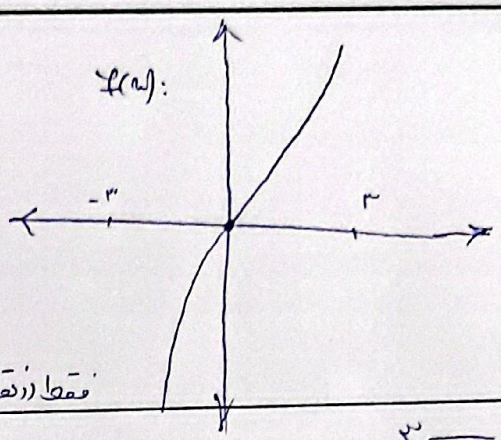
۶

$$|f(x)| = \begin{cases} |x^2+3x| & x \geq 0 \\ |-x^2+3x| & x < 0 \end{cases}$$



$|f(x)|$

$f(x)$:



فقط در نقطه ۰

۷

$$f(x) = \sqrt[3]{x^2}(a-x) \qquad f'(x) = \frac{2x}{3\sqrt[3]{x^4}}(a-x) - \sqrt[3]{x^2}$$

$$f'(x) = \frac{2ax - 2x^2 - 3x^2}{3\sqrt[3]{x^4}} = \frac{2ax - 5x^2}{3\sqrt[3]{x^4}} \rightsquigarrow x(2a-5x)$$

$$\sqrt[3]{x^4} \rightarrow 0 \qquad x = \frac{2a}{5}$$

$$\begin{cases} 0 \longrightarrow 0 \\ a \longrightarrow 0 \\ \frac{2a}{5} \longrightarrow \frac{2a}{5} \times \sqrt[3]{\frac{16a^2}{25}} = \frac{8}{27} \end{cases} \qquad a^5 = \frac{5^5}{2^5} \Rightarrow a = 2/5$$

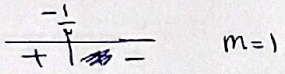
۸

$$f(x) \begin{cases} \sqrt{x^2-x} & x \geq 0 \\ \sqrt{-x^2-x} & x < 0 \end{cases} \qquad f'(x) = \begin{cases} \frac{2x-1}{2\sqrt{x^2-x}} & x > 0 \quad x = \frac{1}{2}, 0, 1 \\ \frac{-2x-1}{2\sqrt{-x^2-x}} & x < 0 \quad x = -\frac{1}{2}, 0, -1 \end{cases}$$

$D_f = (-1, 0] \cup [1, +\infty)$

$1, 0, -1$ کاندید

ولی ست min, max



$m = 1$

$n = 0$

$k = 4$

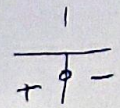
$\frac{4}{4} = 1$

۹

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

$x = 1$ ریشه‌ی خ، ولی نسبت به تابع

همواره مثبت است $m = 0$



۱ مقدار صحیح

۱۰

$$f(x) = \begin{cases} \frac{x}{1-x^2} & x \geq 0 \\ \frac{x}{1+x^2} & x < 0 \end{cases} \qquad f'(x) = \begin{cases} \frac{(1-x^2) - x(-2x)}{1-x^2} \rightsquigarrow x^2+1 = 0 \quad \times & x \geq 0 \\ \qquad 1-x^2 \rightsquigarrow x = \begin{cases} +1 \\ -1 \end{cases} \checkmark & \\ \frac{(1+x^2) - x(2x)}{1+x^2} \rightsquigarrow 1-x^2 = 0 \begin{cases} +1 \times \\ -1 \checkmark \end{cases} & x < 0 \end{cases}$$

همواره مثبت

۲ نقطه $(1, -1)$