25.02.2022

Урок 17.

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ш) $f(x) = \frac{1}{x}(3-\sqrt{x})$

$f'(x) = \frac{d}{dx}\left(\frac{1}{x}\cdot(3-\sqrt{x})\right)$

$f'(x) = \frac{d}{dx}\left(\frac{3-\sqrt{x}}{x}\right)$

$f'(x) = \frac{\frac{d}{dx}(3-\sqrt{x})\cdot x - (3-\sqrt{x})\cdot\frac{d}{dx}(x)}{x^2}$

$f'(x) = \frac{-\frac{1}{2\sqrt{x}}\cdot x - (3-\sqrt{x})\cdot 1}{x^2}$

$f'(x) = \frac{\sqrt{x}-6}{2x^2}$

ч) $f(x) = 2(x-1)(\sqrt{x}-1)$

$f'(x) = \frac{d}{dx}(2x\sqrt{x} - 2x - \sqrt{x} + 1)$

$f'(x) = \frac{d}{dx}\left(2x \cdot x^{\frac{1}{2}} - 2x - \sqrt{x} + 1\right)$

$f'(x) = \frac{d}{dx}(2x^{\frac{3}{2}}) + \frac{d}{dx}(-2x) - \frac{d}{dx}(\sqrt{x}) + \frac{d}{dx}(1)$

$f'(x) = 2 \cdot \frac{3}{2} x^{\frac{1}{2}} - 2 - \frac{1}{2\sqrt{x}} + 0$

$f'(x) = 3\sqrt{x} - 2 - \frac{1}{2\sqrt{x}}$

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ш) $f(x) = \frac{x^3}{3} - 2{,}5x^2 + 6x - 1$

$f'(x) = \frac{d}{dx}\left(\frac{x^3}{3} - 2{,}5x^2 + 6x - 1\right)$

$f'(x) = \frac{d}{dx}\left(\frac{x^3}{3}\right) + \frac{d}{dx}\left(-\frac{5}{2}x^2\right) + \frac{d}{dx}(6x) - \frac{d}{dx}(1)$

$f'(x) = \frac{1}{3} \cdot 3x^2 - \frac{5}{2} \cdot 2x + 6 - 0$

$f'(x) = x^2 - 5x + 6$

э) $f(x) = x^5 - 10x^3 + 40x$

$f'(x) = \frac{d}{dx}(x^5 - 10x^3 + 40x)$

$f'(x) = \frac{d}{dx}(x^5) + \frac{d}{dx}(-10x^3) + \frac{d}{dx}(40x)$

$f'(x) = 5x^4 - 10 \cdot 3x^2 + 40$

$f'(x) = 5x^4 - 30x^2 + 40$

g) $f(x) = \frac{1}{x} + 9x$

$f'(x) = \frac{d}{dx}\left(\frac{1}{x} + 9x\right)$

$f'(x) = \frac{d}{dx}\left(\frac{1}{x}\right) + \frac{d}{dx}(9x)$

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

h) $f(x) = \frac{4}{x} + 25x - 6$

$f'(x) = \frac{d}{dx}\left(\frac{4}{x} + 25x - 6\right)$

$f'(x) = \frac{d}{dx}\left(\frac{4}{x}\right) + \frac{d}{dx}(25x) - \frac{d}{dx}(6)$

$f'(x) = -4 \cdot \frac{1}{x^2} + 25 - 0$

$f'(x) = -\frac{4}{x^2} + 25$

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m) $f(x) = x^3 - 6x^2 - 63x - 2$

$f(x) = \frac{d}{dx}(x^3 - 6x^2 - 63x - 2)$

$f'(x) = \frac{d}{dx}(x^3) + \frac{d}{dx}(-6x^2) + \frac{d}{dx}(-63x) - \frac{d}{dx}(2)$

$f'(x) = 3x^2 - 6 \cdot 2x - 63 - 0$

$f'(x) = 3x^2 - 12x - 63$

p) $f(x) = x^3 - 12x + 56$

$f'(x) = \frac{d}{dx}(x^3) + \frac{d}{dx}(-12x) + \frac{d}{dx}(56)$

$f'(x) = 3x^2 - 12 + 0$

$f'(x) = 3x^2 - 12$