

Practice Quiz
Sections 2.1 – 2.4

1. Given $f(x) = 2x^2 - 5x$. Find $f'(x)$ using the definition of the derivative.

2. Find the equation of the tangent line at $x = -1$ to $f(x) = 2x^2 + 3$.

3. What is the slope of the tangent line to $y = 3x^3 - 2x^2 + 4x - 2$ at $x = 0$?

4. Given $y = 3x^3 - 2x^2 + 4x - 2$

a) Find $\frac{d^3 y}{dx^3}$

b) Find $\left. \frac{d^3 y}{dx^3} \right|_{x=2}$

5. Given $y = 2x^2 + 4\sqrt{x} - \frac{3}{x^2}$, find y'

6. Use the product rule to find the derivative of $f(x)$: $f(x) = (3x^3 - x)(x^2 + 2)$

7. Use the quotient rule to find the derivative of $f(x)$: $f(x) = \frac{2x^2 - 5x + 2}{7x^3}$

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Answers:

1. $4x - 5$

2. $y = -4x + 1$

3. 4

4. a) 18 b) 18

5. $y' = 4x + \frac{2}{\sqrt{x}} + \frac{6}{x^3}$

6. $f'(x) = 15x^4 + 15x^2 - 2$

7. $f'(x) = \frac{-2x^2 + 10x - 6}{7x^4}$