

Math 191
Assignment 1

Covers Sections: 23.1-23.7, 23.9
Due: Mon. Sept. 28 at 8:30am

INSTRUCTIONS:

This assignment will be marked for completion.

Solutions will be posted on the course website 24 hours after the deadline.

You may not copy the work of another person or AI.

Submit jpg or pdf files to the D2L Dropbox.

1. Evaluate the following limit:

$$\lim_{x \rightarrow -7} \frac{x^2 + 9x + 14}{x^2 + 12x + 35}$$

2. Use the **limit definition** to find $f'(x)$ for $f(x) = 3x^2 - 2x$.

3. Use the **limit definition** to find $f'(x)$ for $f(x) = 3x - \frac{2}{x+4}$.

4. An object's displacement (in metres) is given by $s(t) = 3.6t^3 - 2.8t^2 + 2.2$, where t is measured in seconds. Find the object's acceleration at $t = 2.5$ seconds.

5. Find $f'(x)$ and **simplify fully**:

$$f(x) = \frac{2x^2}{5x+1}$$

6. Find the slope of the tangent line to $y = 5x^2 - 6\sqrt{x} + \frac{4}{x} + 3$ at the point $(4, 72)$.

7. Find y' :

a) $y = \frac{-2}{(4x+3)^5}$

b) $y = 9(\sqrt{3x^2 + 1})$

c) $y = 3x(2x + 1)^8$