

# Math 131 - Quiz 6

October 4, 2023

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

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1. (4 points) Determine each derivative. Do not simplify your answers.

(a)  $\frac{d}{dx} [5\sqrt{x} \sec x]$

(b)  $\frac{d}{dt} \frac{5t^3 - 8t^2 - 9t}{\cos t}$

2. (2 points) Let  $y = x - 3x^4 - \sin x$ . Find  $\frac{d^2y}{dx^2}$ .

3. (4 points) An object is thrown upward in such a way that its height after  $t$  seconds is given by  $s(t) = -16t^2 + 32t + 128$ , where  $s$  is measured in feet.

(a) What is the maximum height of the object?

(b) What is the object's velocity when it hits the ground?