

You have 20 minutes to take this quiz. Each problem will be graded for clarity of work as well as correctness, so show all work **clearly and in order**. Circle or otherwise indicate your final answers. Please note that there are problems on both the front and the back of this page.

**1.** (6 points) [Similar to #47, 3.2]

Find a function  $f(x)$  whose derivative is  $f'(x) = 2x^5 - \frac{1}{x^2}$ .

**2.** (6 points) [Similar to #28, 3.2]

Suppose  $f(x) = 3x^2h(x) - 5x$ . Find  $f'(1)$  given that  $h(1) = 3$  and  $h'(1) = 2$ .

**Bonus:** (2 points) List all the differentiation rules that you used.

**3.** (8 points) [Similar to #9, 3.1] Consider the function  $f(x) = \sqrt{x-1}$ . Use the definition of derivative to show that the derivative of  $f(x)$  is:

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

(Warning: Absolutely NO points will be given for using the differentiation “rules”.)