

Name:

Math 105 Quiz 5 covering §3.1-§3.2 **Show all work for credit.**

1.  $f(x) = \sqrt{x} \sin(x)$ , find  $f'(x)$ .

2. Find  $\frac{d}{dx} \left( \frac{6 - xe^x}{x + e^x} \right)$ .

3. Consider the functions  $f(x)$  and  $g(x)$ , for which  $f(0) = 5$ ,  $g(0) = 7$ ,  $f'(0) = -9$ , and  $g'(0) = -7$ .

Find  $h'(0)$  for the function  $h(x) = \frac{f(x)}{g(x)}$ .

4. Let  $f(x) = \sin^4(x)$ . Find  $f'(x)$ . Reminder:  $\sin^4(x) = (\sin(x))^4$

5. Let  $f(x) = \sin(x^4)$ . Find  $f'(x)$ .

6.  $g(x) = (12 + e^{2x})^{2/3}$ . Find  $g'(x)$ .