

Each problem is worth 2 points. Clear and complete justification is required for full credit.

1. State the derivative of the function  $f(x) = e^x$ .

$$f'(x) = e^x$$

2. State the derivative of the function  $g(x) = x^n$ .

$$g'(x) = nx^{n-1}$$

3. State the Product Rule for derivatives.

If  $f(x)$  and  $g(x)$  are differentiable,  
then  $(fg)' = f'g + fg'$ .

4. What is  $(\tan x)'$ ?

$$(\tan x)' = \left(\frac{\sin}{\cos}\right)' = \frac{\cos^2 x + \sin^2 x}{\cos^2 x} = \frac{1}{\cos^2 x} = \sec^2 x$$

5. State the Quotient Rule for derivatives.

If  $f(x)$  and  $g(x)$  are differentiable and  $g(x) \neq 0$ ,  
the  $(f/g)' = \frac{f'g - fg'}{g^2}$ .

Excellent!