

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!