1. (6 points) The curve \( y = f(x) \) is graphed below. On the same set of axes, sketch the derivative \( y = f'(x) \). Be sure to mark open circles at points where the derivative is undefined.

\[
\begin{array}{c c}
\text{Solution:} & \text{The derivative is graphed above in red.}
\end{array}
\]

2. (4 points) Answer each question by circling True if it must be true and False if it is ever false. No justification is required.

- True | False: If \( u \) and \( v \) are differentiable functions, then
  \[
  \frac{d}{dx} (uv) = \frac{du}{dx} \frac{dv}{dx}.
  \]

- True | False: If \( u \) and \( v \) are differentiable functions, then
  \[
  \frac{d}{dx} (u + v) = \frac{du}{dx} + \frac{dv}{dx}.
  \]

- True | False: If \( n \) is any real number, then
  \[
  \frac{d}{dx} (x^n) = nx^{n-1},
  \]
  for all \( x \) where the powers \( x^n \) and \( x^{n-1} \) are defined.

- True | False: The derivative of the exponential function is
  \[
  \frac{d}{dx} (e^x) = xe^{x-1}.
  \]