

## Exponential and Logarithm Worksheet

1.  $\frac{d}{dx} \left( \frac{e^x}{\sqrt{1-x}} \right)$

2.  $\frac{d}{dx} (x^2 e^{\tan x})$

3.  $\frac{d}{dx} (x \sec(e^x))$

4.  $\frac{d}{dx} \left( \frac{1}{e^{2x} + e^{-x}} \right)$

5.  $\frac{d}{dx} \left( e^{(x^e)} \right)$

6.  $\frac{d}{dx} (x^2 \ln(\cos x))$

7.  $\frac{d}{dx} \left( \sqrt{\sin(e^2)} - 9 \right)$

8.  $\frac{d}{dx} \left( \ln(x^3 \sin x) \right)$

9.  $\frac{d}{dx} \left( e(\ln x)^e \right)$

**10.** Use implicit differentiation to find the equation of the tangent line to the curve  $xe^y - ye^x = 1$  at the point  $(1, 0)$ . DO NOT approximate  $e$  in your final answer.