Name_____

Differentiate the following functions.

1. $f(x) = 2^{\sin x}$

2. $g(t) = \ln \tan(\cos t)$

3. $y = 4e^{x^2 + \sin x}$

4. $y = \dfrac{e^x + e^{-x}}{2}$

5. $f(x) = \log_3\left(x^4 + \sin 3x\right)$

6. $y = \frac{1}{x} + \ln x^3$

7. $y = 2\ln \sin x - 5\left(\ln x\right)^4$

8. $f(x) = \sin \ln x$

9. $f(x) = \log(10x - 3) + 3e^{\tan x}$

10. $y = \dfrac{e^x - e^{-x}}{e^x + e^{-x}}$

LOG / EXPONENTIAL DERIVATIVES

$$\frac{d}{dx}\left(a^x\right) = a^x \ln a$$

$$\frac{d}{dx}\left(\log_a x\right) = \frac{1}{x \ln a}$$

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

$$\frac{d}{dx}\left(\ln x\right) = \frac{1}{x}$$