Name _____

Homework 18
section 3.5

1. (4) Compute $k'(\theta)$ for $k(\theta) = 2\tan(e^{5\theta})$.

2. (4) What is the slope of the tangent line to the graph of $g(x) = 2^e \ln(\cos x \tan x)$ at $\frac{\pi}{6}$?

3. (8) If $k \geq 1$, the graphs of $y = \sin x$ and $y = ke^{-x}$ intersect for $x \geq 0$. Find the smallest value of k for which the graphs are tangent. What are the *exact* coordinates of the point of tangency? [Hint: You should have two equations involving x and k, one for intersection, and one for tangency. It will be difficult to deal with either of these equations separately, but you should be able to figure out the answer by combining them].

4. (4) Find the derivative of $h(\phi) = \frac{\sin(4\phi)}{\phi^2}$