KF

Math 101 (171)
Quiz 2 (3.1-3.9)

Name: ID #: Section: 31

1. Find the equation of the normal line to the curve of $y = \sin(xe^y)$ at $(0,0)$.

2. Find the slope of the tangent line to the curve of
$$y = \frac{(\cos x)^x}{\cos x}$$
at $x = 0$.

3. Let $f(x) = x + e^x$. Find $(f^{-1})'(1)$.

4. The radius of a sphere is increasing at a rate of 0.3 cm/s. How fast is the volume increasing when the radius is 20 cm?

5. If $h(2) = 4$ and $h'(2) = -3$, find
$$\frac{d}{dx}\left(\frac{h(x)}{e^x}\right)\Big|_{x=2}.$$

6. Evaluate
$$\frac{d}{dx}\left[\lim_{n\to\infty}\left(1 + \frac{2x}{n}\right)^n\right]$$
at $x = 0$.