Name _____

Homework 21
section 10.3

Find the Taylor series expansions of the given functions about $x = 0$. Give (at least) the first 3 nonzero terms and the general term. For example, your answers should look like:

$$\cos(x^2) = 1 - \frac{x^4}{2!} + \frac{x^8}{4!} + \cdots + (-1)^n \frac{x^{4n}}{(2n)!} + \cdots$$

1. (4) $\dfrac{z^3}{e^{z^2}}$

2. (3) $\ln(1 - 3t)$

3. (3) What is the Taylor series expansion of $2 \sin x \cos x$ about $x = 0$? [Hint: it may help to use a trig identity]

4. (6) Find the Taylor series expansion about $x = 0$ for $\sin^2 x$ from the series for $2 \sin x \cos x$.

5. (4) Find the Taylor series expansion about $x = 0$ for $\cos^2 x$.