Name _____

Homework 18
Section 10.3

For numbers 1–3, find the Taylor series expansions of the given functions about 0. Give (at least) the first 3 nonzero terms and the general term. For example, your answers should look like:

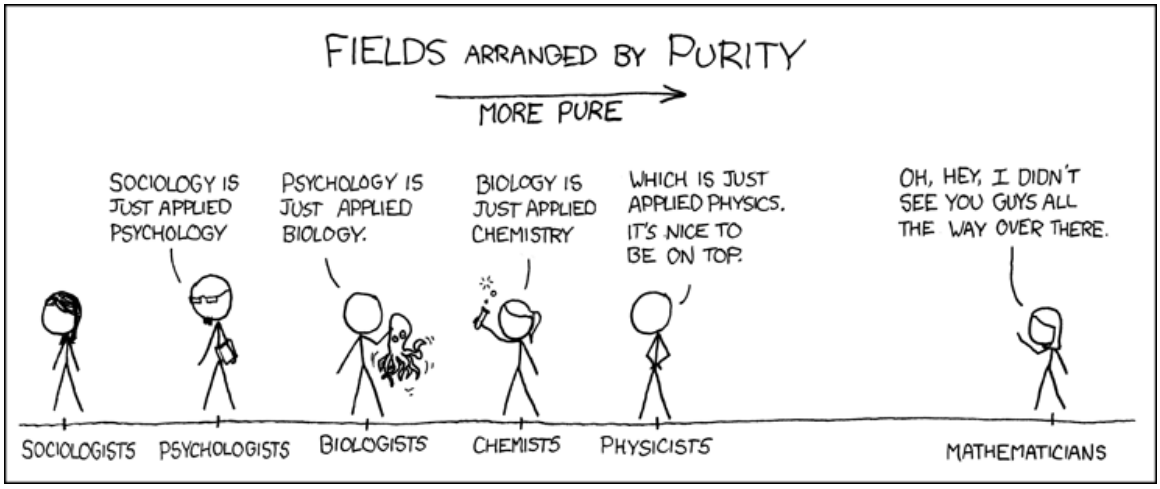
$$\cos\left(x^2\right) = 1 - \frac{x^4}{2!} + \frac{x^8}{4!} + \cdots + (-1)^n \frac{x^{4n}}{(2n)!} + \cdots$$

1. (3) $\ln(1 - 4t)$

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

3. (4) $\frac{1}{2}\ln\left(\frac{1+x}{1-x}\right)$

More blank space, so another comic!



4. (3ea) Given

$$\tan x = x + \frac{1}{3}x^3 + \frac{2}{15}x^5 + \frac{17}{315}x^7 + \frac{62}{2835}x^9 + \cdots,$$

determine the Taylor series expansions about $x = 0$ with at least the first 4 nonzero terms for each of the following.
Each of these is actually easy– Don't do them the hard way. **Work smarter, not harder.**

(a) $\sec^2 x$

(b) $2\sec^2 x \tan x$

(c) $\tan^2 x$