Review of calculus I facts

Due Friday, February 22.

1. Write down the product rule.
2. Write down the quotient rule.
3. Write down the chain rule.
4. Have the basic derivatives memorized. Make yourself a hand–written table containing the following. Look up the answers if you don't recall them. Memorize this.
   (a) $\frac{d}{dx}x^n$
   (b) $\frac{d}{dx}e^x$
   (c) $\frac{d}{dx}a^x$
   (d) $\frac{d}{dx}\ln x$
   (e) $\frac{d}{dx}\log_a x$
   (f) $\frac{d}{dx}\sin x$
   (g) $\frac{d}{dx}\cos x$
   (h) $\frac{d}{dx}\tan x$
   (i) $\frac{d}{dx}\csc x$
   (j) $\frac{d}{dx}\sec x$
   (k) $\frac{d}{dx}\cot x$
   (l) $\frac{d}{dx}\arcsin x$
   (m) $\frac{d}{dx}\arccos x$
   (n) $\frac{d}{dx}\arctan x$
5. Compute the derivatives of the following functions:
   (a) $f(x) = 2^x \sin(x) \arcsin(x)$
   (b) $g(x) = \dfrac{3x-2}{\sqrt{2x+4}}$
   (c) $h(x) = \ln\left(\tan\left(\sqrt[3]{1+x^3}\right)\right)$
   (d) $k(x) = x^{\cos^2 x}$