This homework is due at lab next week, on Tuesday, March 3.
There is a quiz in class on Wednesday, March 4.
The next test comes up the following Wednesday, March 11.

1. Write each of the following functions, $h(x)$, in the form $h(x) = f(g(x))$. Identify the functions $f(x)$ and $g(x)$. The apply the chain rule, $h'(x) = f'(g(x))g'(x)$ to find the derivative of $h(x)$.

a) $h(x) = (\sin(x) + 1)^7$

b) $h(x) = \cos(5\sqrt{x})$

c) $h(x) = \tan(\sin(x) + \cos(x))$

2. Compute the following derivatives. (You can use the chain rule without making up functions $f(x)$, $g(x)$, or $h(x)$.)

a) $\dfrac{d}{dt}\dfrac{t}{\sqrt{t^2+1}}$

b) $\frac{d}{dx}\left(3\sin(x^2) + 2\cos(x^3)\right)$

c) $\frac{d}{dz}\cos(z\sin(z))$

3. Compute the following derivatives. Each of these problems require you to use the chain rule more than once.

a) $\dfrac{d}{dx}\sqrt{\dfrac{4+\sin(x^4)}{5+\cos(x^5)}}$

b) $\frac{d}{d\theta}\sin(\sin(\sin(\theta)))$