Using the Chain Rule

We have a nice formula for the chain rule: $\frac{df}{dx} = \frac{df}{du} \cdot \frac{du}{dx}$, but we have to figure out what this means and how to use it.

- First we need to pick u so that two things happen. First, so that $\frac{du}{dx}$ is easy to calculate and secondly, so that $f(u)$ is a nice function that involves only powers of u.
- Now, we calculate $\frac{df}{du}$, this should be relatively easy. That is we should only have to use the power rule and maybe the product or quotient rule.
- Now we calculate $\frac{du}{dx}$. This should be easy based on how we picked u.
- Now, we can find the "hard" derivative, $\frac{df}{dx}$ by multiplying the two "easy" derivatives. $\frac{df}{dx} = \frac{df}{du} \cdot \frac{du}{dx}$