Math 142 Group Quiz 2

Names: _____

1. How much more work is done when pulling a spring $2x$ meters as opposed to x meters? That is, find

$$\frac{\text{(the work needed to pull a spring from rest to a distance of } 2x \text{ units)}}{\text{(the work needed to pull a spring from rest to a distance of } x \text{ units)}}.$$

2. Let X be the collection of all current Cal Poly students and let Y be the set of numbers $1, 2, \ldots, 100$. Give an example of a function f from X to Y that has an inverse or explain why this cannot be done.

3. Calculate $\frac{d}{dx}(x \ln x)$. What is $\int \ln x \, dx$?

4. Why does $\frac{e^x - e^{-x}}{2}$ have an inverse $g(x)$? Find the equation of the line tangent to $g(x)$ at $x = 0$.