

Math 210 (Lesieutre)  
Quiz 2  
January 30, 2017

Name: \_\_\_\_\_

**Problem 1.** Consider the parametrized curve  $\mathbf{r}(t) = \langle t, t^2, t^3 \rangle$ . Set up the integral for the length of the curve between  $t = 1$  and  $t = 2$ . (You don't need to actually integrate!)

We just need to use the arc length formula: it's

$$\int_1^2 \sqrt{x'(t)^2 + y'(t)^2 + z'(t)^2} dt = \int_1^2 \sqrt{1 + 4t^2 + 9t^4} dt.$$

This is not an integral that's possible to really evaluate. Using numerical integration techniques, you can find that it's a bit over 7.7.