Fall 2004 Calculus I, sections 4, 5, 6, Courant Institute of Mathematical Sciences, NYU.

Homework 11, due November 29

Self check (not to hand in, answers are in the back of the book):

Section 7.1: 1, 3, 17, 21, 31.

Section 7.2: 1, 15[1].

To hand in:

Section 7.1: 2, 4, 18, 24, 30.

Section 7.2: 2, 16.

More problems (to hand in). These are things from quiz 4 that many people might review.

1. Calculate $\frac{d}{dr}\int_0^{r^2}\sqrt{1+\sqrt{u}}du$.

2. We know $\int_1^x \frac{1}{t}dt = \ln(x)$.

a. Calculate $\int_1^x \frac{1}{t+1}dt$. Hint: Use a substitution.

b. Calculate $\int_1^x \frac{t}{t+1}dt$. Hint: Use the same substitution.

3. The function $f(z) = \frac{z}{(1+az)^3}$ is defined for $z > 0$. Its maximum value is 2. Find a.

4. Calculate $\frac{d}{dt}\sqrt{1+\sqrt{\sin(t^3)}}$.

[1] Also use a calculator to find the exact values and report the error.