Math 1720 Homework 6, due Friday Mar 9.
Explain all answers and show all calculations.

(Notation: I've been using arccos, arcsin, etc, for the inverse trig functions. The book mostly uses $\cos^{-1}$, $\sin^{-1}$, etc, but these are the same functions, i.e. $\cos^{-1} = \arccos$, etc. I just prefer the former notation because it removes the confusion with power notation. That is, we write $\cos^2(x)$ to denote $(\cos(x))^2$. This suggests that $\cos^{-1}(x)$ might denote $(\cos(x))^{-1}$, but conventionally it does not.)

Problems, in suggested order. The problems (n) displayed in parentheses are just suggested, not for submission. Problems A - E are below. We'll do some related problems in class on Monday.

7.5: (11), A, 12, 15, B, 19, (22), 27, (30), (34), 37, (44), 48, 52, 53, 92(note), C, 70, 71, 67, D.

Note: problem 92(a) should be done using the same general method we used in class to find $\frac{d}{dx}(\arcsin(x))$.

Problem A. Find, if possible,

$$\cos^{-1}(-\sqrt{3}/2).$$

Problem B. Find the following, where possible.

$$\sin^{-1}(\sin(7\pi/6)).$$

$$\tan^{-1}(-1/\sqrt{3}).$$

Problem C. Show that

$$\frac{d}{dx}(\arctan(x)) = \frac{1}{1+x^2}$$

by the same general method as for problem 92(a). (As part of this, you will need to simplify $\sec(\arctan(x))$.)

Problem D. (i) Find

$$\int \frac{x}{\sqrt{1-x^4}}dx.$$

(Hint: use a substitution to convert the integrand to a form that's integrable using an inverse trig function.)

(ii) Find

$$\int_1^3 \frac{1}{(1+x)\sqrt{x}}dx.$$