# Fall 2005 Math 152

**Integration Review**

*courtesy: Amy Austin*

(covering sections 6.4, 6.5)

## Section 6.4

1. Find the derivative of the following functions

   a.) $\int_1^x \sqrt{t^3+t+1}\,dt$

   b.) $\int_1^{\sin x} \frac{1}{t^4+1}\,dt$

2. Evaluate the integral

   a.) $\int_1^2 (x^3+1)\,dx$

   b.) $\int_0^2 (x^2-1)^2\,dx$

   c.) $\int_1^2 \frac{x^2+1}{x^3}\,dx$

   d.) $\int_{\pi/4}^{\pi/3} \tan x\,dx$

   e.) $\int_{-1}^1 5e^x\,dx$

   f.) $\int_{-3}^0 |x+1|\,dx$

   g.) $\int_0^1 \frac{1}{x^2+1}\,dx$

## Section 6.5

3. Compute the following integrals.

   a.) $\int \frac{2x^2}{\sqrt{x^3-1}}\,dx$

   b.) $\int \frac{x}{x^2+1}\,dx$

   c.) $\int_{-1}^2 xe^{x^2}\,dx$

   d.) $\int x\cos(2-x^2)\,dx$

   e.) $\int_{e^2}^{e^3} \frac{1}{x\ln x}\,dx$

   f.) $\int \frac{x}{(x+1)^2}\,dx$

4. If $f$ is continuous and $\int_0^4 f(x)\,dx = 10$, find $\int_0^2 f(2x)\,dx$