TABLE OF INTEGRALS FOR THE FINAL EXAM

MATH 15300 SECTION 11
JUNE 6, 2007

$$\frac{d}{dx}\sin^{-1}(x) = \frac{1}{\sqrt{1-x^2}}$$
$$\frac{d}{dx}\tan^{-1}(x) = \frac{1}{1+x^2}$$
$$\frac{d}{dx}\sec^{-1}(x) = \frac{1}{|x|\sqrt{x^2-1}}$$
$$\int \sin^n(x)dx = -\frac{1}{n}\sin^{n-1}(x)\cos(x) + \frac{n-1}{n}\int \sin^{n-2}(x)dx, \quad n \geq 2$$
$$\int \cos^n(x)dx = \frac{1}{n}\cos^{n-1}(x)\sin(x) + \frac{n-1}{n}\int \cos^{n-2}(x)dx, \quad n \geq 2$$
$$\int \tan^n(x)dx = \frac{1}{n-1}\tan^{n-1}(x)dx - \int \tan^{n-2}(x)dx, \quad n \geq 2$$
$$\int \sec^n(x)dx = \frac{1}{n-1}\sec^{n-2}(x)\tan(x) + \frac{n-2}{n-1}\int \sec^{n-2}(x)dx, \quad n \geq 2$$

$$\sinh^{-1}(x) = \ln(x + \sqrt{x^2+1}), \quad x \,\text{real}$$
$$\cosh^{-1}(x) = \ln(x + \sqrt{x^2-1}), \quad x \geq 1$$
$$\tanh^{-1}(x) = \frac{1}{2}\ln\left(\frac{1+x}{1-x}\right), \quad -1 < x < 1$$

$$\sin(A+B) = \sin(A)\cos(B) + \cos(A)\sin(B)$$
$$\cos(A+B) = \cos(A)\cos(B) - \sin(A)\sin(B)$$
$$\sin^2(A) + \cos^2(A) = 1$$
$$\tan^2(A) + 1 = \sec^2(A)$$
$$1 + \cot^2(A) = \csc^2(A)$$

$$R_n(x) = \frac{1}{n!}\int_0^x f^{(n+1)}(t)(x-t)^n dt$$
$$R_n(x) = \frac{f^{(n+1)}(c)}{(n+1)!}x^{n+1}$$
$$|R_n(x)| \leq \left(\max_{t\in J}|f^{(n+1)}(t)|\right)\frac{|x|^{n+1}}{(n+1)!}$$