MA 2560: Calculus II (Spring 2010)
Formula Sheet for Exams

Here is a list of formulas that I will provide for you on your upcoming exam. You should *not* expect to use all of them during the exam. If you carefully read the review for the exam, it should be clear to you which formulas that I want you to memorize. I am intentionally making you have to go figure out which formulas these are.

$$\frac{d}{dx}[\sinh x] = \cosh x$$

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$$\frac{d}{dx}[\tanh x] = \text{sech}^2 x$$

$$\frac{d}{dx}[\text{sech } x] = -\text{sech } x \tanh x$$

$$\frac{d}{dx}[\sin^{-1} x] = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}[\cos^{-1} x] = \frac{-1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}[\tan^{-1} x] = \frac{1}{1+x^2}$$

$$\frac{d}{dx}[\sec^{-1} x] = \frac{1}{x\sqrt{x^2-1}}$$

$$\frac{d}{dx}[\sinh^{-1} x] = \frac{1}{\sqrt{1+x^2}}$$

$$\frac{d}{dx}[\cosh^{-1} x] = \frac{1}{\sqrt{x^2-1}}$$

$$\frac{d}{dx}[\tanh^{-1} x] = \frac{1}{1-x^2}$$

$$\frac{d}{dx}[\text{sech}^{-1} x] = \frac{-1}{x\sqrt{1-x^2}}$$

$$\frac{d}{dx}[b^x] = b^x \ln b$$

$$\log_b(x) = \frac{1}{x \ln b}$$

$$\int \sinh u \, du = \cosh u + C$$

$$\int \cosh u \, du = \sinh u + C$$

$$\int \text{sech}^2 u \, du = \tanh u + C$$

$$\int \text{sech } u \tanh u \, du = -\text{sech } u + C$$

$$\int \frac{1}{\sqrt{a^2-u^2}} \, du = \sin^{-1} \frac{u}{a} + C$$

$$\int \frac{1}{u^2+a^2} \, du = \frac{1}{a} \tan^{-1} \frac{u}{a} + C$$

$$\int \frac{1}{u\sqrt{u^2-a^2}} \, du = \frac{1}{a} \sec^{-1} \frac{u}{a} + C$$

$$\int \frac{1}{\sqrt{u^2+a^2}} \, du = \sinh^{-1} \frac{u}{a} + C$$

$$\int \frac{1}{\sqrt{u^2-a^2}} \, du = \cosh^{-1} \frac{u}{a} + C$$

$$\int \frac{1}{a^2-u^2} \, du = \frac{1}{a} \tanh^{-1} \frac{u}{a} + C$$

$$\int b^u \, du = \frac{b^u}{\ln b} + C$$

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