

Formulas You Should Know for Math 230

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Trig Identities

$$\sin^2(x) + \cos^2(x) = 1$$

Algebraic manipulation of the above identity yields the other two Pythagorean Identities:

$$1 + \cot^2(x) = \csc^2(x)$$

$$1 + \tan^2(x) = \sec^2(x)$$

Two identities useful for dealing with the integrals of $\sin^2(x)$ or $\cos^2(x)$

$$\sin^2(x) = \frac{1}{2} + \frac{\cos(2x)}{2}$$

$$\cos^2(x) = \frac{1}{2} - \frac{\cos(2x)}{2}$$

An incomplete list of integrals we should be know by heart:

$$\int u^n du = \frac{1}{n+1} u^{n+1} + C$$

$$\int \frac{du}{u} = \ln(u) + C$$

$$\int \sin\left(\frac{x}{a}\right) dx = -\frac{1}{a} \cos\left(\frac{x}{a}\right) + C$$

$$\int \cos\left(\frac{x}{a}\right) dx = \frac{1}{a} \sin\left(\frac{x}{a}\right) + C$$

$$\int \frac{du}{a^2+u^2} = \frac{1}{a} \tan^{-1}\left(\frac{u}{a}\right) + C$$