

Interlude: Some integrals...

If you have suggestions... or corrections... please let Paul know and he will update the list!

Things to memorize.

$$\int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1} x + C$$

$$\int \frac{1}{1+x^2} dx = \tan^{-1} x + C$$

Things to have handy.

$$\int \frac{1}{\sqrt{x^2-1}} dx = \ln|x + \sqrt{x^2-1}| + C$$

$$\int \frac{1}{\sqrt{x^2+1}} dx = \ln|x + \sqrt{x^2+1}| + C$$

$$\int \frac{1}{1-x^2} dx = \frac{1}{2} \ln \left| \frac{1+x}{1-x} \right| + C \quad \text{or} \quad \int \frac{1}{x^2-1} dx = \frac{1}{2} \ln \left| \frac{x-1}{x+1} \right| + C$$

$$\int \sqrt{1-u^2} du = \frac{1}{2} \left[u\sqrt{1-u^2} + \sin^{-1} u \right]$$