

Math 132

Some Basic Integrals – January 29, 2012

The following are the basic building blocks for integration, and come directly from reversing the differentiation rules you derived in Math 131.

Our strategy in approaching an unknown integral will be to use substitution (and other techniques) to reduce to one or more of the integrals on this list.

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C \text{ for } n \neq -1$$

$$\int x^{-1} dx = \int \frac{1}{x} dx = \ln |x| + C \text{ for } x > 0 \text{ or } x < 0.$$

$$\int e^x dx = e^x + C$$

$$\int \sin x dx = -\cos x + C$$

$$\int \cos x dx = \sin x + C$$

$$\int \sec^2 x dx = \tan x + C$$

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

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