Basic Properties of Integrals:

1. Linearity:
   (a) $\int (f(x) + g(x))dx = \int f(x)dx + \int g(x)dx.$
   (b) $\int (a \cdot f(x))dx = a \cdot \int f(x)dx.$
2. Additivity:
$$\int_a^c f(x)dx = \int_a^b f(x)dx + \int_b^c f(x)dx.$$
3. Reversing the limits of integration:
$$\int_b^a f(x)dx = -\int_a^b f(x)dx.$$

Table of Basic Indefinite Integrals:

The Function	The Indefinite Integral
$f(x) = 0$	$\int f(x)dx = C$
$f(x) = 1$	$\int f(x)dx = x + C$
$f(x) = a$	$\int f(x)dx = a \cdot x + C$
$f(x) = x$	$\int f(x)dx = \frac{x^2}{2} + C$
$f(x) = x^n$ for $n \neq -1$	$\int f(x)dx = \frac{x^{n+1}}{n+1} + C$
$f(x) = x^{-1} = \frac{1}{x}$	$\int f(x)dx = \ln\|x\| + C$
$f(x) = e^x$	$\int f(x)dx = e^x + C$
$f(x) = e^{a \cdot x}$ for $a \neq 0$	$\int f(x)dx = \frac{1}{a} e^{a \cdot x} + C$
$f(x) = \sin(x)$	$\int f(x)dx = -\cos(x) + C$
$f(x) = \sin(a \cdot x)$ for $a \neq 0$	$\int f(x)dx = -\frac{1}{a}\cos(a \cdot x) + C$
$f(x) = \cos(x)$	$\int f(x)dx = \sin(x) + C$
$f(x) = \cos(a \cdot x)$ for $a \neq 0$	$\int f(x)dx = \frac{1}{a}\sin(a \cdot x) + C$
$f(x) = \frac{1}{x^2+1}$	$\int f(x)dx = \arctan(x) + C$