Formulas.

1. $\frac{d[f(x)+g(x)]}{dx} = \frac{df(x)}{dx} + \frac{dg(x)}{dx}$
2. $\frac{d[f(x)-g(x)]}{dx} = \frac{df(x)}{dx} - \frac{dg(x)}{dx}$
3. $\frac{dx^n}{dx} = nx^{n-1}$ for all numbers n.
4. $\int x^n dx = \frac{1}{n+1}x^{n+1} + C$
5. $\frac{d[f(x)g(x)]}{dx} = f'(x)g(x) + f(x)g'(x)$
6. $\frac{d[f(x)/g(x)]}{dx} = \frac{f'(x)g(x)-f(x)g'(x)}{g^2(x)}$
7. $\frac{d\sin(x)}{dx} = \cos(x) \quad \frac{d\cos(x)}{dx} = -\sin(x)$
8. $\int \cos(x)dx = \sin(x) + C \quad \int \sin(x)dx = -\cos(x) + C$
9. $\frac{d\tan(x)}{dx} = \sec^2(x) \quad \frac{d\cot(x)}{dx} = -\csc^2(x)$
10. $\int \sec^2(x)dx = \tan(x) + C \quad \int \csc^2(x)dx = -\cot(x) + C$
11. $\frac{d\sec(x)}{dx} = \sec(x)\tan(x) \quad \frac{d\csc(x)}{dx} = -\csc(x)\cot(x)$
12. $\int \sec(x)\tan(x)dx = \sec(x) + C$
    $\int \csc(x)\cot(x)dx = -\csc(x) + C$

Here is the definition of the derivative.

$$f'(x) = \lim_{h\to 0}\frac{f(x+h) - f(x)}{h}$$