Useful trig facts.

$$\sin^2\theta + \cos^2\theta = 1, \quad \tan^2\theta + 1 = \sec^2\theta, \quad \cos^2\theta = \frac{1}{2}(1+\cos 2\theta), \quad \sin^2\theta = \frac{1}{2}(1-\cos 2\theta)$$

$$\cos 2\theta = \cos^2\theta - \sin^2\theta, \quad \sin 2\theta = 2\sin\theta\cos\theta$$

$$\sin\frac{\pi}{6} = \frac{1}{2}, \quad \sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}, \quad \sin\frac{\pi}{4} = \cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}, \quad \cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}, \quad \cos\frac{\pi}{3} = \frac{1}{2},$$

Some derivatives and antiderivatives.

$\frac{d}{dx}\sin(x) = \cos(x)$	$\frac{d}{dx}\cos(x) = -\sin(x)$	$\frac{d}{dx}\tan(x) = (\sec(x))^2$
$\frac{d}{dx}\csc(x) = -\csc(x)\cot(x)$	$\frac{d}{dx}\sec(x) = \sec(x)\tan(x)$	$\frac{d}{dx}\cot(x) = -(\csc(x))^2$
$\frac{d}{dx}\arcsin(x) = \frac{1}{\sqrt{1-x^2}}$	$\frac{d}{dx}\arccos(x) = \frac{-1}{\sqrt{1-x^2}}$	$\frac{d}{dx}\arctan(x) = \frac{1}{1+x^2}$
$\frac{d}{dx}b^x = \ln(b)\, b^x$	$\int \sec x \ \mathrm{dx} = \ln\lvert\sec x + \tan x\rvert + C.$	$\int \frac{dx}{x^2+a^2} = \frac{1}{a}\arctan\left(\frac{x}{a}\right) + C$ if $a \neq 0$.

Fundamental Theorem of Calculus, part I.

Part 1: If f is continuous on $[a,b]$, then function g defined as

$$g(x) = \int_a^x f(t)\,dt, \quad a \le x \le b$$

satisfies $g'(x) = f(x)$.

Fundamental Theorem of Calculus, part II.

If f is continuous on $[a,b]$, then

$$\int_a^b f(x)\,dx = F(b) - F(a)$$

where F is any anti-derivative of f (ie. F is any function such that $F' = f$).

Restricted domains for trig functions

$\sin\theta$ for $-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}$	$\cos\theta$ for $0 \le \theta \le \pi$	$\tan\theta$ for $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$
$\csc\theta$ for θ in $[-\pi/2, 0) \cup (0, \pi/2]$	$\sec\theta$ for θ in $[0, \pi/2) \cup (\pi/2, \pi]$	$\cot\theta$ for $0 < \theta < \pi$

Partial Fraction Decomposition.

$$\frac{1}{(x-a)(x-b)} = \frac{A}{x-a} + \frac{B}{x-b} \text{ if } a \neq b, \text{ and } \qquad \frac{1}{x(x^2+a)} = \frac{A}{x} + \frac{Bx+C}{x^2+a} \text{ if } a \neq 0$$