Trigonometric identities

The Essentials

- $\sin^2(x) + \cos^2(x) = 1$

- $\sin(2x) = 2\sin(x)\cos(x)$

- $\cos(2x) = \cos^2(x) - \sin^2(x)$

Useful for integration

Using the above identities you can deduce the following identities:

- $1 + \tan^2(x) = \sec^2(x)$

- $1 + \cot^2(x) = \csc^2(x)$

- $\sin^2(x) = \frac{1}{2}\left(1 - \cos(2x)\right)$

- $\cos^2(x) = \frac{1}{2}\left(1 + \cos(2x)\right)$

The Extras

The following identities may be useful:

- $\cos(x \pm y) = \cos(x)\cos(y) \mp \sin(x)\sin(y)$

- $\sin(x \pm y) = \sin(x)\cos(y) \pm \sin(y)\cos(x)$

- $\cos(x)\cos(y) = \frac{1}{2}\left(\cos(x + y) + \cos(x - y)\right)$

- $\sin(x)\sin(y) = \frac{1}{2}\left(\cos(x - y) - \cos(x + y)\right)$