

Mathematics 3200 Information Sheet

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

$$\cot^2 \theta + 1 = \csc^2 \theta$$

$$1 + \tan^2 \theta = \sec^2 \theta$$

$$\sin(A+B) = \sin A \cos B + \cos A \sin B$$

$$\sin 2A = 2 \sin A \cos A$$

$$\sin(A-B) = \sin A \cos B - \cos A \sin B$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$\cos 2A = 1 - 2 \sin^2 A$$

$$\cos 2A = 2 \cos^2 A - 1$$

$$\cos(A-B) = \cos A \cos B + \sin A \sin B$$

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$A = A_0(1+r)^n$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$${}_n P_r = \frac{n!}{(n-r)!}$$

$$\frac{n!}{a!b!c! \dots}$$

$${}_n C_r = \binom{n}{r} = \frac{n!}{(n-r)!r!}$$

Binomial Theorem:

$$(x+y)^n = {}_n C_0 (x)^n (y)^0 + {}_n C_1 (x)^{n-1} (y)^1 + {}_n C_2 (x)^{n-2} (y)^2 + \dots + {}_n C_{n-1} (x)^1 (y)^{n-1} + {}_n C_n (x)^0 (y)^n$$