# *Mathematics 3200 Information Sheet*

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

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

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

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

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

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

$$A=P(1+i)^n$$

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

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

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

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

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

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

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

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

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

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

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

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

Binomial Theorem:

$$(x+y)^n={}_nC_0(x)^n(y)^0+{}_nC_1(x)^{n-1}(y)^1+{}_nC_2(x)^{n-2}(y)^2+\ldots+{}_nC_{n-1}(x)^1(y)^{n-1}+{}_nC_n(x)^0(y)^n$$