**MAWA FORMULA SHEET FOR MATHEMATICS SPECIALIST (Unit 1)**

**Combinatorics**

**Combinations** 

**Inclusion – exclusion principle** 



 **Permutations** 

**Vectors in the plane**

**Magnitude of a vector **

**Unit vector **

**Scalar product **

**Vector projection** (of **a** on **b**) ****

**Trigonometric functions formulae from Mathematical Methods**

**Angle sum and difference identites** $\sin(\left(A\pm B\right))=\sin(A\cos(B)\pm )\cos(A\sin(B))$

 $\cos(\left(A\pm B\right)=\cos(A\cos(B\mp \sin(A\sin(B)))))$

**Area of a sector** $A=\frac{1}{2}r^{2}θ$

**Area of a segment** $A=\frac{1}{2}r^{2}(θ-\sin(θ))$

**Length of an arc** $l=rθ$

**Length of a chord** $l$ $=2r\sin(\frac{1}{2}θ)$

**Sine rule** $\frac{a}{\sin(A)}=\frac{b}{\sin(B)}=\frac{c}{\sin(C)}$

**Cosine rule** $c^{2}=a^{2}+b^{2}-2ab\cos(C)$

**Cot(x)=1/(tanx)**

**Tan(x)=sin(x)/cos(x)**