MAWA FORMULA SHEET FOR MATHEMATICS METHODS (Unit 1)

Functions and graphs

Binomial distribution $(x+y)^n = x^n + \binom{n}{1} x^{n-1} y + \cdots + \binom{n}{r} x^{n-r} y^r + \cdots + y^n$

Completing the square $ax^2 + bx + c = a\left(x + \frac{b}{2a}\right)^2 + \left(c - \frac{b^2}{4a}\right)$

Discriminant $\Delta = b^2 - 4ac$

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

Trigonometric functions

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

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

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

Area of a segment $A = \frac{1}{2} r^2 ¿$

Length of an arc $l = r\theta$

Length of a chord $l ¿ 2r \sin\frac{1}{2}\theta$

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

Cosine rule $c^2 = a^2 + b^2 - 2ab\cos C$

Counting and probability

Probability $P(A) = 1 - P(A)$

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cap B) = P(A)\ P(B \mid A) = P(B)\ P(A \mid B)$

Conditional probability $P(A \vee B) = \frac{P(A \cap B)}{P(B)}$