

1.1	The n^{th} term of an arithmetic sequence The sum of n terms of an arithmetic sequence The n^{th} term of a geometric sequence The sum of n terms of a finite geometric sequence The sum of an infinite geometric sequence	$u_n = u_1 + (n-1)d$ $S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$ $u_n = u_1 r^{n-1}$ $S_n = \frac{u_1(r^n - 1)}{r - 1} = \frac{u_1(1 - r^n)}{1 - r}, \quad r \neq 1$ $S_\infty = \frac{u_1}{1 - r}, \quad r < 1$
1.2	Exponents and logarithms Laws of logarithms Change of base	$a^x = b \Leftrightarrow x = \log_a b$ $\log_c a + \log_c b = \log_c ab$ $\log_c a - \log_c b = \log_c \frac{a}{b}$ $\log_c a^r = r \log_c a$ $\log_b a = \frac{\log_c a}{\log_c b}$
1.3	Binomial coefficient Binomial theorem	$\binom{n}{r} = \frac{n!}{r!(n-r)!}$ $(a+b)^n = a^n + \binom{n}{1}a^{n-1}b + \dots + \binom{n}{r}a^{n-r}b^r + \dots + b^n$
2.4	Axis of symmetry of graph of a quadratic function	$f(x) = ax^2 + bx + c \Rightarrow \text{axis of symmetry } x = -\frac{b}{2a}$
2.6	Relationships between logarithmic and exponential functions	$a^x = e^{x \ln a}$ $\log_a a^x = x = a^{\log_a x}$
2.7	Solutions of a quadratic equation Discriminant	$ax^2 + bx + c = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \quad a \neq 0$ $\Delta = b^2 - 4ac$

3.1	Length of an arc Area of a sector	$l = \theta r$ $A = \frac{1}{2} \theta r^2$
3.2	Trigonometric identity	$\tan \theta = \frac{\sin \theta}{\cos \theta}$
3.3	Pythagorean identity Double angle formulae	$\cos^2 \theta + \sin^2 \theta = 1$ $\sin 2\theta = 2 \sin \theta \cos \theta$ $\cos 2\theta = \cos^2 \theta - \sin^2 \theta = 2 \cos^2 \theta - 1 = 1 - 2 \sin^2 \theta$
3.6	Cosine rule Sine rule Area of a triangle	$c^2 = a^2 + b^2 - 2ab \cos C ; \cos C = \frac{a^2 + b^2 - c^2}{2ab}$ $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ $A = \frac{1}{2} ab \sin C$