

Number and algebra

**Arithmetic sequence****B**

$$u_n = u_1 + (n - 1)d$$

Arithmetic series**B**

$$S_n = \frac{n}{2}(2u_1 + (n - 1)d) = \frac{n}{2}(u_1 + u_n)$$

Geometric sequence**B**

$$u_n = u_1 r^{n-1}$$

**Geometric series,
 $r \neq 1$** **B**

$$S_n = \frac{u_1(r^n - 1)}{r - 1} = \frac{u_1(1 - r^n)}{1 - r}$$

Sum to infinity, $|r| < 1$ **B**

$$S_\infty = \frac{u_1}{1 - r}$$

**Compound interest (k
times a year, n years,
 $r\%$)****B**

$$FV = PV \left(1 + \frac{r}{100k}\right)^{kn}$$

Exponents & logs**B**

$$a^x = b \iff x = \log_a b, \quad a^x = e^{x \ln a}, \quad \log_a a^x = x = a^{\log_a x}$$

Laws of logs**B**

$$\log_a xy = \log_a x + \log_a y, \quad \log_a \frac{x}{y} = \log_a x - \log_a y, \\ \log_a x^m = m \log_a x$$

B given in the exam. Learn the rest.