
Exercises 5

- (1)
 - (a) Write out $(1+x)^8$ using \sum -notation.
 - (b) Write out $(1-x)^8$ using \sum -notation.
 - (c) Calculate the coefficient of a^2b^8 in $(a+b)^{10}$.
 - (d) Calculate the coefficient of x^3 in $(3+4x)^6$.
 - (e) Calculate the coefficient of x^3 in $(3x^2 - \frac{1}{2x})^9$. What is the value of the constant term?
- (2) Use the binomial theorem to prove the following.
 - (a) $2^n = \sum_{i=0}^n \binom{n}{i}$.
 - (b) $0 = \sum_{i=0}^n (-1)^i \binom{n}{i}$.
 - (c) $(\frac{3}{2})^n = \sum_{i=0}^n \frac{1}{2^i} \binom{n}{i}$.