

Section 1: The general binomial expansion**Exercise level 1**

1. Find the first four terms of the expansion of each of the expressions below in ascending powers of x . In each case state the values of x for which the expansion is valid.

(i) $(1-2x)^{-2}$

(ii) $\sqrt{1+x}$

(iii) $\frac{1}{1+3x}$

(iv) $(1-x)^{-\frac{2}{3}}$

2. Expand each of the following functions in ascending powers of x up to the term in x^3 . In each case state the values of x for which the expansion is valid.

(i) $\sqrt{4+x}$

(ii) $\frac{1}{2+x}$

(iii) $(3-2x)^{-2}$

(iv) $(8-3x)^{\frac{1}{3}}$