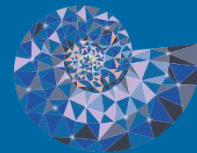


Binomial estimation



Gold

Given the expression:

$$(1 + x^{-1})^{15}$$

- a** Expand the expression in descending powers of x up to and including the term in x^{-4} , simplifying each coefficient in the expansion.
- b** Use your series expansion, with a suitable value for x , to obtain an estimate for 1.1^{15} , giving your answer to 2 decimal places.

Silver

Given the expression:

$$(2 - x)^7$$

- a** Expand the expression in ascending powers of x up to and including the term in x^3 , simplifying each coefficient in the expansion.
- b** Use your series expansion, with a suitable value for x , to obtain an estimate for 1.92^7 , giving your answer to 2 decimal places.

Bronze

Expand:

$$(3 + x)^9$$

in ascending powers of x up to and including the term in x^3 , simplifying each coefficient in the expansion.