



Binomial Expansion

Questions

Suitable for:

Pearson Edexcel International A-Level (iAL) — Pure Mathematics 4



Question 1

Find the first four terms in the binomial expansion of

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

State the range of values of x for which the expansion is valid.

(4 marks)

Total for question = 4 marks





Question 2

Find the first four terms in the binomial expansion of

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

State the range of values of x for which the expansion is valid.

(4 marks)

Total for question = 4 marks





Question 3

Find the first four terms in the binomial expansion of

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

State the range of values of x for which the expansion is valid.

(4 marks)

Total for question = 4 marks





Question 4

Find the first three terms in the binomial expansion of

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

State the range of values of x for which the expansion is valid.

(4 marks)

Total for question = 4 marks



Question 5

Find the first three terms in the binomial expansion of

$$(4 - x)^{\frac{1}{2}}$$

State the range of values of x for which the expansion is valid.

(5 marks)

Total for question = 5 marks





Question 6

Find the first four terms in the binomial expansion of

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

State the range of values of x for which the expansion is valid.

(5 marks)

Total for question = 5 marks



Question 7

(a) Use the binomial expansion of $(1 + x)^{1/2}$, with a suitable value of x , to find an approximation to $\sqrt{1.04}$, giving your answer to 4 decimal places.

(3 marks)

(b) State why your chosen value of x lies within the range of validity of the expansion.

(1 marks)

Total for question = 4 marks





Question 8

(a) Express

$$\frac{5x + 3}{(1 + x)(1 + 2x)}$$

in partial fractions.

(3 marks)

(b) Hence find the first three terms in the series expansion of

$$\frac{5x + 3}{(1 + x)(1 + 2x)}$$

stating the range of values of x for which the expansion is valid.

(4 marks)

Total for question = 7 marks





Question 9

(a) Express

$$\frac{5 - 2x}{(1 - x)(1 + 2x)}$$

in partial fractions.

(3 marks)

(b) Hence find the first four terms in the series expansion of

$$\frac{5 - 2x}{(1 - x)(1 + 2x)}$$

stating the range of values of x for which the expansion is valid.

(5 marks)

Total for question = 8 marks

