

Year 1 Pure Exam Questions – Binomial Expansion

Q1.

(a) Use the binomial theorem to find all the terms of the expansion of

$$(2 + 3x)^4$$

Give each term in its simplest form.

(4)

(b) Write down the expansion of

$$(2 - 3x)^4$$

in ascending powers of x , giving each term in its simplest form.

(1)

(Total 5 marks)

Q2.

Find the first 4 terms, in ascending powers of x , of the binomial expansion of

$$\left(1 + \frac{3x}{2}\right)^8$$

giving each term in its simplest form.

(4)
(Total 4 marks)

Q3.

Find the first 4 terms, in ascending powers of x , of the binomial expansion of

$$\left(3 - \frac{1}{3}x\right)^5$$

giving each term in its simplest form.

(4)

(Total for question = 4 marks)

Q4.

(a) Find the first 3 terms, in ascending powers of x , of the binomial expansion of

$$(3 + bx)^5$$

where b is a non-zero constant. Give each term in its simplest form.

(4)

Given that, in this expansion, the coefficient of x^2 is twice the coefficient of x ,

(b) find the value of b .

(2)

(Total 6 marks)

Q5.

(a) Find the first 4 terms of the binomial expansion, in ascending powers of x , of

$$\left(1 + \frac{x}{4}\right)^8$$

giving each term in its simplest form.

(4)

(b) Use your expansion to estimate the value of $(1.025)^8$, giving your answer to 4 decimal places.

(3)

(Total 7 marks)

Q6.

(a) Find the first 3 terms, in ascending powers of x , of the binomial expansion of

$$(2 + kx)^7$$

where k is a constant. Give each term in its simplest form.

(4)

Given that the coefficient of x^2 is 6 times the coefficient of x ,

(b) find the value of k .

(2)

(Total 6 marks)