

$$g(x) = (2 + ax)^8 \quad \text{where } a \text{ is a constant}$$

Given that one of the terms in the binomial expansion of $g(x)$ is $3402x^5$

(a) find the value of a .

(4)

Using this value of a ,

(b) find the constant term in the expansion of

$$\left(1 + \frac{1}{x^4}\right)(2 + ax)^8$$

(3)

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

$$(1 + kx)^{10}$$

where k is a non-zero constant. Write each coefficient as simply as possible.

(3)

Given that in the expansion of $(1 + kx)^{10}$ the coefficient of x^3 is 3 times the coefficient of x ,

(b) find the possible values of k .

(3)

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

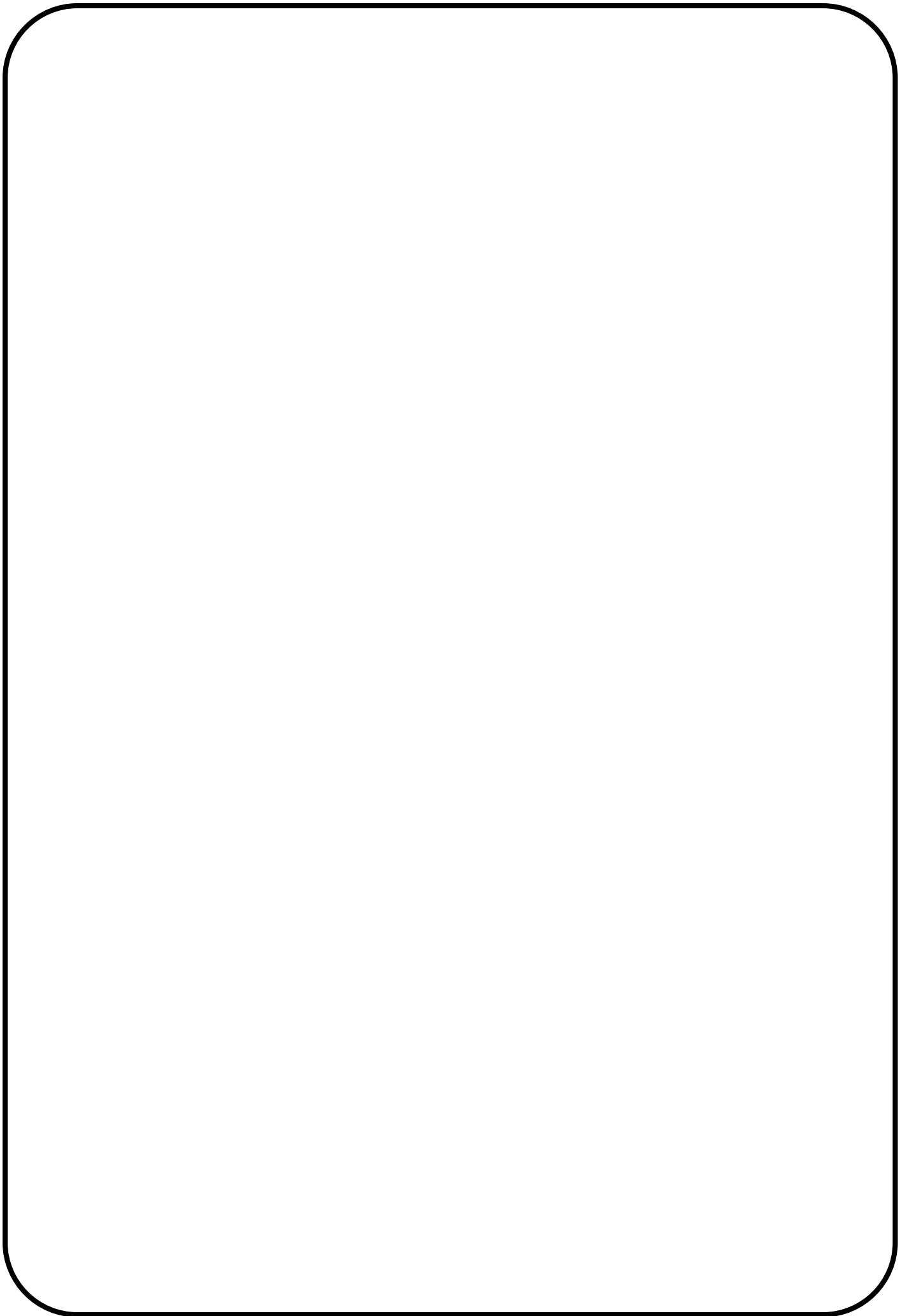
$$\left(2 + \frac{3x}{4}\right)^6$$

giving each term in its simplest form.

(4)

(b) Explain how you could use your expansion to estimate the value of 1.925^6
You do not need to perform the calculation.

(1)



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

$$\left(2 - \frac{x}{16}\right)^9$$

giving each term in its simplest form.

(4)

$$f(x) = (a + bx)\left(2 - \frac{x}{16}\right)^9, \text{ where } a \text{ and } b \text{ are constants}$$

Given that the first two terms, in ascending powers of x , in the series expansion of $f(x)$ are 128 and $36x$,

(b) find the value of a ,

(2)

(c) find the value of b .

(2)

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

$$\left(2 - \frac{x}{2}\right)^7, \text{ giving each term in its simplest form.}$$

(4)

(b) Explain how you would use your expansion to give an estimate for the value of 1.995^7

(1)

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)

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

$$(2 - 9x)^4$$

giving each term in its simplest form.

(4)

$$f(x) = (1 + kx)(2 - 9x)^4, \text{ where } k \text{ is a constant}$$

The expansion, in ascending powers of x , of $f(x)$ up to and including the term in x^2 is

$$A - 232x + Bx^2$$

where A and B are constants.

(b) Write down the value of A .

(1)

(c) Find the value of k .

(2)

(d) Hence find the value of B .

(2)

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

$$\left(2 - \frac{x}{4}\right)^{10}$$

giving each term in its simplest form.

(4)

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

$$(2 - 3x)^6$$

giving each term in its simplest form.

(4)

(b) Hence, or otherwise, find the first 3 terms, in ascending powers of x , of the expansion of

$$\left(1 + \frac{x}{2}\right)(2 - 3x)^6$$

(3)

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

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

giving each term in its simplest form.

(4)

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

$$(2 - 5x)^6$$

Give each term in its simplest form.

(4)