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

$$(1 - 4x)^7$$

giving each term in simplest form.

(4)

In the series expansion of

$$(5 + kx)(1 - 4x)^7 \qquad \text{where } k \text{ is a constant}$$

the coefficient of the term in x^2 is 1316

(b) Use the answer to part (a) to find the value of k.

(2)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 1 continued

(Total for Question 1 is 6 marks)

2: The line joining the points (–2, 5) and (4, 15) is the diameter of a circle C.

(a) Find an equation for C.

(5)

(b) Hence find the exact coordinates of the point on C that is nearest the x-axis.

(2)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA