2. The curve C has equation

$$3x + 5y^2 + 4x^2y = 10(2^x) + 35 \qquad y > 0$$

(a) Find an expression for $\frac{dy}{dx}$ in terms of x and y

(6)

Curve C cuts the y-axis at the point P

(b) Find the exact value of the gradient of the tangent to C at P

(2)

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Question 2 continued

(Total for Question 2 is 8 marks)

3. Given that the binomial expansion, in ascending powers of x, of

$$6(4+Ax)^{-\frac{1}{2}}$$

is $$B-\frac{1}{4}x+Cx^2+\ldots$$

(a) find the values of the constants A, B and C.

(5)

(b) State the range of values of x for which this expansion is valid.

(1)

For the expansion,

(c) find the coefficient of the term in x^3

(2)

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