

Edexcel (U.K.) Pre 2017

Questions By Topic

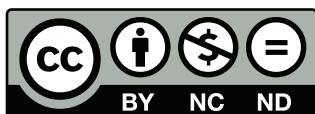
C4 Chap04 Differentiation

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2. A curve has equation

$$x^2 + 2xy - 3y^2 + 16 = 0.$$

Find the coordinates of the points on the curve where $\frac{dy}{dx} = 0$.

(7)

Q2

(Total 7 marks)

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1. A curve C is described by the equation

$$3x^2 + 4y^2 - 2x + 6xy - 5 = 0.$$

Find an equation of the tangent to C at the point $(1, -2)$, giving your answer in the form $ax + by + c = 0$, where a , b and c are integers.

(7)

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1. A curve C is described by the equation

$$3x^2 - 2y^2 + 2x - 3y + 5 = 0.$$

Find an equation of the normal to C at the point $(0, 1)$, giving your answer in the form $ax + by + c = 0$, where a , b and c are integers.

(7)

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3. A curve has parametric equations

$$x = 7 \cos t - \cos 7t, \quad y = 7 \sin t - \sin 7t, \quad \frac{\pi}{8} < t < \frac{\pi}{3}.$$

(a) Find an expression for $\frac{dy}{dx}$ in terms of t . You need not simplify your answer.

(3)

(b) Find an equation of the normal to the curve at the point where $t = \frac{\pi}{6}$.

Give your answer in its simplest exact form.

(6)

6. (a) Given that $y = 2^x$, and using the result $2^x = e^{x \ln 2}$, or otherwise, show that $\frac{dy}{dx} = 2^x \ln 2$. (2)

(4)

4. A curve has equation $3x^2 - y^2 + xy = 4$. The points P and Q lie on the curve. The gradient of the tangent to the curve is $\frac{8}{3}$ at P and at Q .

(b) Find the coordinates of P and Q . (3)

书山有路勤为径，学海无涯苦作舟。

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3. A curve C has equation

$$2^x + y^2 = 2xy$$

Find the exact value of $\frac{dy}{dx}$ at the point on C with coordinates $(3, 2)$.

(7)

5. Find the gradient of the curve with equation

at the point on the curve where $x = 2$. Give your answer as an exact value.

(7)

非淡泊无以明志，非宁静无以致远。

(7)

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2. The curve C has equation

$$3^{x-1} + xy - y^2 + 5 = 0$$

Show that $\frac{dy}{dx}$ at the point $(1, 3)$ on the curve C can be written in the form $\frac{1}{\lambda} \ln(\mu e^3)$,

where λ and μ are integers to be found.

(7)

