

13 A curve C has parametric equations

$$x = 4(4t + 1)^2$$

$$y = e^{-4t}$$

for $-\frac{1}{4} \leq t \leq 0$

13 (a) Find $\frac{dy}{dx}$ in terms of t

[3 marks]

13 (b) Find an equation of the tangent to C at the point where $t = 0$

[3 marks]

13 (c) Find a Cartesian equation for C in the form $y = f(x)$

Fully justify your answer.

[3 marks]