15. The curve C has equation

$$(x + y)^3 = 3x^2 - 3y - 2$$

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

(5)

The point $P(1, 0)$ lies on C.

(b) Show that the normal to C at P has equation

$$y = -2x + 2$$

(2)

(c) Prove that the normal to C at P does **not** meet C again.

You should use algebra for your proof and make your reasoning clear.

(5)