12 The parametric equations of a curve are given by $x = 2\cos\theta$ and $y = 3\sin\theta$ for $0 \leq \theta < 2\pi$.

(a) Find $\frac{dy}{dx}$ in terms of θ. **[2]**

The tangents to the curve at the points P and Q pass through the point (2, 6).

(b) Show that the values of θ at the points P and Q satisfy the equation $2\sin\theta + \cos\theta = 1$. **[4]**

(c) Find the values of θ at the points *P* and *Q*. **[5]**