2019 Q10

10. A curve is defined implicitly by the equation \( x^2 + y^2 = xy + 12 \).

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

(b) There are two points where the tangent to the curve has equation \( x = k \), \( k \in \mathbb{R} \). Find the values of \( k \).

Answers

(a) \( \frac{dy}{dx} = \frac{y-2x}{2y-x} \)

(b) \( k = \pm4 \)