

Advanced Higher Maths
SQA 2022 Paper 1
Question 4



A curve is defined by the equation $y^3 + 4y = 2xy + 1$.

- (a) Use implicit differentiation to find an expression for $\frac{dy}{dx}$. 3
- (b) Find the gradient of the tangent to the curve when $y = -1$. 1
- (c) Show that the curve has no stationary point. 2
-

Answers:

- (a) $\frac{dy}{dx} = \frac{2y}{3y^2 + 4 - 2x}$
- (b) $m = -2$
- (c) Solve $\frac{dy}{dx} = 0$ to obtain $y = 0$ and substitute into the original equation: LHS=0, RHS=1.