AQA – Differentiation – A2 Mathematics P1

1. June/2021/Paper_7357/1/No.2

Given that $y = \ln(5x)$

find $\frac{dy}{dx}$

Circle your answer.

[1 mark]

$\frac{dy}{dx} = \frac{1}{x}$ $\quad$ $\frac{dy}{dx} = \frac{1}{5x}$ $\quad$ $\frac{dy}{dx} = \frac{5}{x}$ $\quad$ $\frac{dy}{dx} = \ln 5$

2. June/2021/Paper_7357/1/No.10a

(a) Given that

$$y = \tan x$$

use the quotient rule to show that

$$\frac{dy}{dx} = \sec^2 x$$

[3 marks]

3. June/2021/Paper_7357/1/No.12

The equation of a curve is

$$(x+y)^2 = 4y + 2x + 8$$

The curve intersects the positive x-axis at the point P.

(a) Show that the gradient of the curve at P is $-\frac{3}{2}$

[6 marks]

(b) Find the equation of the normal to the curve at P, giving your answer in the form $ax + by = c$, where a, b and c are integers.

[2 marks]