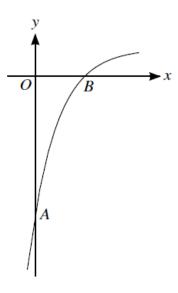
## <u>Differentiation – 2021 A2 Nov</u>

1. Nov/2021/Paper\_9709/21/No.5



The diagram shows the curve with parametric equations

$$x = \ln(2t + 3),$$
  $y = \frac{2t - 3}{2t + 3}$ 

The curve crosses the y-axis at the point A and the x-axis at the point B.

(a)	Show that $\frac{dy}{dx} = \frac{6}{2t+3}$ .	[4]

<b>(b)</b>	Find the gradient of the curve at <i>A</i> .	[2]
	. 29	
	70,	
(c)	Find the gradient of the curve at <i>B</i> .	[2]
	A00*	
	•••	

$y = 5x - 2\tan 2x$
has exactly one stationary point in the interval $0 \le x < \frac{1}{4}\pi$ .
Find the coordinates of this stationary point, giving each coordinate correct to 3 significant figures.  [6]

**2.** Nov/2021/Paper\_9709/22/No.3 The curve with equation

Find the exact value of the gradient of the normal to the curve at the point $(\sqrt{2}, \frac{1}{12}\pi)$ .	[6]
O <sub>4</sub>	
60	

**3.** Nov/2021/Paper\_9709/22/No.5 A curve has equation  $x^2 + 4x \cos 3y = 6$ .