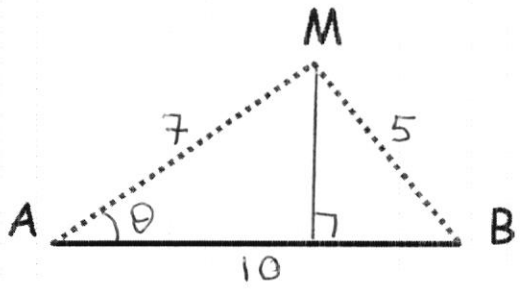
Name: _____ 5-a-day Further Maths

16th June

Corbettmaths

Prove $tan\theta cos\theta \equiv sin\theta$

$$LHS = \frac{\sin\theta}{\cancel{\cos\theta}} \times \cancel{\cos\theta}$$
$$= \sin\theta$$



The line AB is 10cm long.
Point M is 7cm from Point A.
Point M is 5cm from Point B.

Work out the shortest distance from point M to the line AB.

$5^2 = 7^2 + 10^2 - 2 \times 7 \times 10 \cos\theta$
$25 = 149 - 140\cos\theta$
$140\cos\theta = 124$
$\cos\theta = \frac{31}{35}$
$[\theta = 27.7°]$
Distance $= 7\sin\theta$
$= 3.25\text{cm}$

Work out the equation of the normal to the curve $y = (x+1)(x+9)$ at the point where $x = 2$

$y = x^2 + 10x + 9$
$\frac{dy}{dx} = 2x + 10$
$x = 2 \Rightarrow \frac{dy}{dx} = 14,\ y = 33$
$m_\perp = -\frac{1}{14}$
Normal is $y - 33 = -\frac{1}{14}(x-2)$
$y = -\frac{1}{14}x + \frac{232}{7}$