


9th December		 Corbettmaths
<p>A circle has equation</p> $(x + 4)^2 + (y - 7)^2 = 9$ <p>Write down the coordinates of the centre of the circle.</p> <p>$(-4, 7)$</p>	<p>Write down the equation of a tangent to the circle</p> <p>Radius = 3</p> <p>Tgts: $y = 4, y = 10$ $x = -7, x = -1$</p>	
<p>Rationalise and simplify</p> $\frac{18 - \sqrt{6}}{3 - \sqrt{6}}$	$\begin{aligned} \times \frac{3 + \sqrt{6}}{3 + \sqrt{6}} &= \frac{54 + 18\sqrt{6} - 3\sqrt{6} - 6}{9 - 6} \\ &= \frac{48 + 15\sqrt{6}}{3} \\ &= \underline{16 + 5\sqrt{6}} \end{aligned}$	
<p>Factorise $3x^2 - 17x + 10$</p>	$\begin{aligned} &= 3x^2 - 15x - 2x + 10 \\ &= 3x(x - 5) - 2(x - 5) \\ &= \underline{(x - 5)(3x - 2)} \end{aligned}$	
<p>Hence solve</p> $3(y - 1)^2 - 17(y - 1) + 10 = 0$	$\begin{aligned} \Rightarrow (y - 1 - 5)(3(y - 1) - 2) &= 0 \\ \Rightarrow (y - 6)(3y - 5) &= 0 \\ \Rightarrow \underline{y = 6, y = \frac{5}{3}} \end{aligned}$	
<p>A curve has equation $y = x^2 + 9x - 3$</p> <p>At point Q on the curve, the tangent is parallel to the line $y = 2 - 5x$</p> <p>Work out the coordinates of Q.</p>	$\frac{dy}{dx} = 2x + 9$ <p>At Q $2x + 9 = -5$ $2x = -14$ $x = -7$</p> <p>$\underline{Q(-7, -17)}$</p>	