

Question	Answer	Marks	AOs	Guidance
5	<p>Equations are $x^2 - 4y = 10, x + 5y = k$</p> <p>DR</p> $(k - 5y)^2 - 4y = 10$ $25y^2 + (-4 - 10k)y + (k^2 - 10) (= 0)$ <p>Tangent $\Rightarrow b^2 - 4ac = 0$</p> $(-4 - 10k)^2 - 4(25)(k^2 - 10) = 0$ $k = -\frac{127}{10} \text{ (-12.7)}$ <p>OR DR</p> <p>Gradient of line = $-\frac{1}{5}$</p> $\frac{dy}{dx} = \frac{1}{2}x$ $\frac{1}{2}x = -\frac{1}{5}$ $x = -\frac{2}{5}$ $y = -\frac{123}{50} \text{ (-2.46)} \Rightarrow k = -\frac{127}{10} \text{ (-12.7)}$	<p>M1*</p> <p>A1</p> <p>Dep*M1</p> <p>A1</p> <p>A1</p> <p>B1</p> <p>B1</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>[5]</p>	<p>3.1a</p> <p>1.1</p> <p>2.1</p> <p>1.1</p> <p>2.2a</p> <p>B1</p> <p>M1</p> <p>A1</p> <p>A1</p>	<p>Substitute for x/y to eliminate one of the variables</p> <p>Obtain correct (unsimplified) quadratic</p> <p>Uses $b^2 - 4ac$ correctly for their quadratic</p> <p>Fully correct substitution must equal 0</p> <p>k correct – with sufficient working</p> <p>Correct differentiation</p> <p>Equates their derivative with their gradient of line</p> <p>x from correct working only</p> <p>k from correct working only</p> <p>If y eliminated</p> $5x^2 + 4x - 4k - 50 (= 0)$ $16 - 4(5)(-4k - 50) = 0$ $2x - 4 \frac{dy}{dx} = 0$