



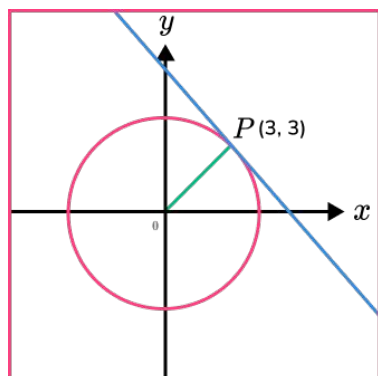
THIRD SPACE
LEARNING

GCSE Exam Questions

Equation of a Tangent to a
Circle | Geometry & Measure

GCSE Exam Questions: Equation of a Tangent to a Circle

- 1) The diagram shows the circle $x^2 + y^2 = 18$ with a tangent at the point $P(3,3)$.



- (a) Find the gradient of the line OP .

(2)

- (b) Find the gradient of the tangent.

(1)

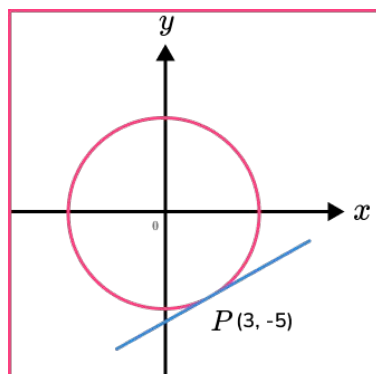
- (c) Find the equation of the tangent.

(2)

(5 marks)

GCSE Exam Questions: Equation of a Tangent to a Circle

- 2) Here is a circle, centre O , and the tangent to the circle at point $P(3, -5)$



Find the equation of the tangent at the point P .

(4 marks)

- 3) The line L is a tangent to the circle $x^2 + y^2 = 29$ at the point P .

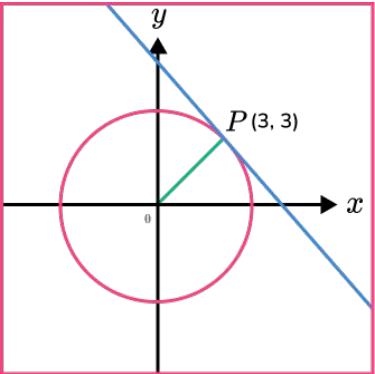
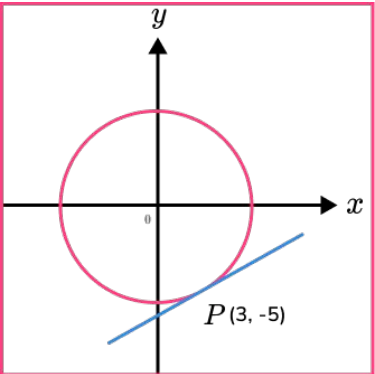
P is the point $(2, 5)$

The line L crosses the x -axis at the point Q .

Work out the area of triangle OPQ .

(6 marks)

GCSE Exam Questions: Equation of a Tangent to a Circle Answers

	Question	Answer	Marks
1) (a)	<p>The diagram shows the circle $x^2 + y^2 = 18$ with a tangent at the point $P(3,3)$.</p>  <p>Find the gradient of the line OP.</p>	<p>(a) $\frac{3 - 0}{3 - 0}$ oe</p> <p>1</p>	<p>(1)</p> <p>(1)</p>
(b)	Find the gradient of the tangent.	(b) - 1	(1)
(c)	Find the equation of the tangent.	<p>(c) $y = -x + c$</p> <p>$y = -x + 6$</p>	<p>(1)</p> <p>(1)</p>
2)	<p>Here is a circle, centre O, and the tangent to the circle at point $P(3, -5)$</p>  <p>Find the equation of the tangent at the point P.</p>	<p>Gradient radius $= -\frac{5}{3}$</p> <p>Gradient tangent $= \frac{3}{5}$</p> <p>Correct substitution of P into</p> <p>$y = \frac{3}{5}x + c$ to find</p> <p>$c = -6.8$</p> <p>$y = \frac{3}{5}x - 6.8$</p>	<p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p>

GCSE Exam Questions: Equation of a Tangent to a Circle Answers

	Question	Answer	Marks
3)	<p>The line L is a tangent to the circle $x^2 + y^2 = 29$ at the point P.</p> <p>P is the point $(2, 5)$</p> <p>The line L crosses the x-axis at the point Q.</p> <p>Work out the area of triangle OPQ.</p>	Gradient radius = $\frac{5}{2}$	(1)
		Gradient tangent = $-\frac{2}{5}$	(1)
		$y - 5 = -\frac{2}{5}(x - 2)$	
		$y = -\frac{2}{5}x + 5.8$	(1)
		$Q(14.5, 0)$	(1)
		$\frac{14.5 \times 5}{2}$	(1)
		36.25	(1)

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