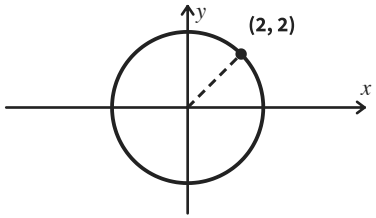
The equation of a tangent to a circle

1

Find the equation of the tangent to $x^2 + y^2 = 8$ at the point $(2, 2)$.



gradient of radius = 1

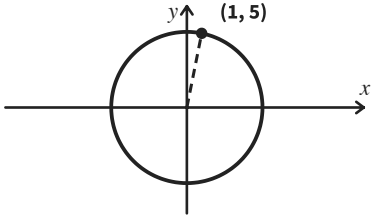
gradient of tangent = −1

c =

Equation

2

Find the equation of the tangent to $x^2 + y^2 = 26$ at the point $(1, 5)$.



gradient of radius = 5

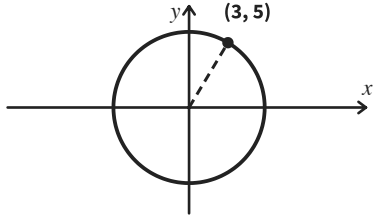
gradient of tangent =

c =

Equation

3

Find the equation of the tangent to $x^2 + y^2 = 34$ at the point $(3, 5)$.



gradient of radius =

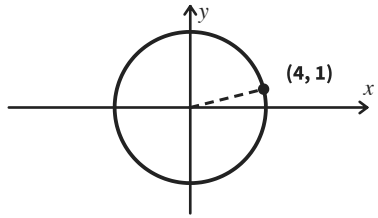
gradient of tangent =

c =

Equation

4

Find the equation of the tangent to $x^2 + y^2 = 17$ at the point $(4, 1)$.



gradient of radius =

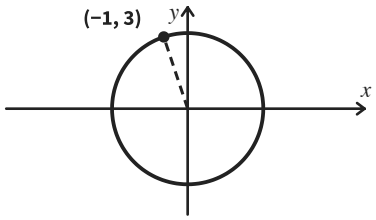
gradient of tangent =

c =

Equation

5 *Notice the change!*

Find the equation of the tangent to $x^2 + y^2 = 10$ at the point $(-1, 3)$.



gradient of radius =

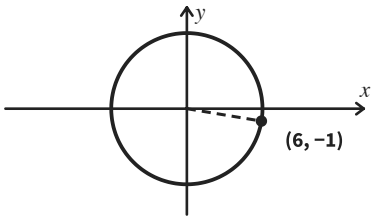
gradient of tangent =

c =

Equation

6

Find the equation of the tangent to $x^2 + y^2 = 37$ at the point $(6, -1)$.



gradient of radius =

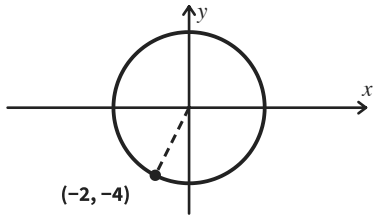
gradient of tangent =

c =

Equation

7

Find the equation of the tangent to $x^2 + y^2 = 20$ at the point $(-2, -4)$.



Equation

8

Sam finds the tangent to $x^2 + y^2 = 58$ at $(3, 7)$. He flips the radius's gradient and uses $\frac{3}{7}$. Explain his mistake.

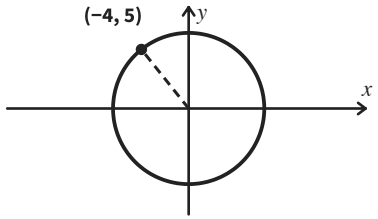
Find the correct equation.

Equation

The equation of a tangent to a circle *further practice*

9

Find the equation of the tangent to $x^2 + y^2 = 41$ at the point $(-4, 5)$.



Answer _____

10

Find the equation of the tangent to $x^2 + y^2 = 25$ at $(-4, -3)$. Give it in the form $ax + by = k$, where a, b and k are whole numbers.

Answer _____

11

Q is a point on the circle $x^2 + y^2 = 45$. Its y coordinate is 6 and it is to the left of the y axis. Find the equation of the tangent at Q.

Answer _____

12

An athlete swings a hammer round the circle $x^2 + y^2 = 5$, in metres.

She lets go at $(1, -2)$ and the hammer flies along the tangent. Where does its path cross the x axis?

Answer _____

13

The tangent to $x^2 + y^2 = 45$ at $(3, 6)$ meets the x axis at A and the y axis at B. Find the area of triangle OAB, where O is the origin.

Answer _____

14

Show that the line $y = 3x - 10$ is the tangent to $x^2 + y^2 = 10$ at $(3, -1)$.

Answer _____

15

The tangents to $x^2 + y^2 = 50$ at $(5, 5)$ and at $(7, -1)$ meet at T.
Find the coordinates of T.

Answer _____

16

Explain why the tangents to $x^2 + y^2 = 29$ at $(2, 5)$ and at $(-2, -5)$ are parallel.

Answer _____