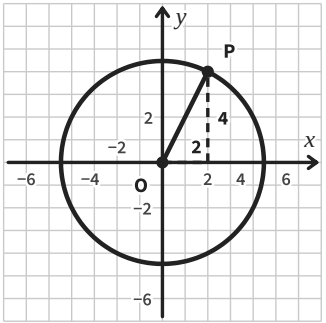
Equation of a tangent to a circle

1

P **(2, 4)** is on the circle $x^2 + y^2 = 20$.
Find the gradient of the radius OP.

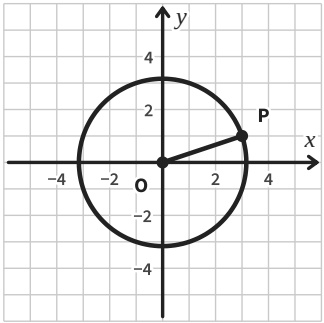


$4 \div 2$

Answer _____

2

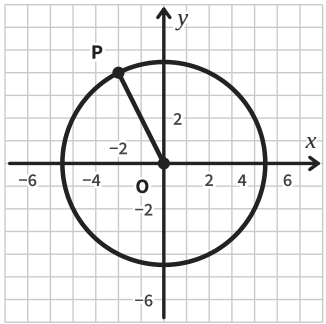
P **(3, 1)** is on the circle $x^2 + y^2 = 10$.
Find the gradient of the radius OP.



Answer _____

3

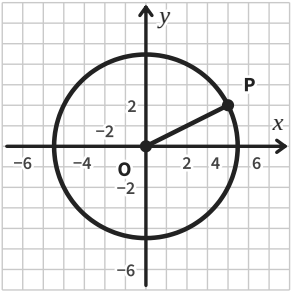
P **(−2, 4)** is on the circle $x^2 + y^2 = 20$.
Find the gradient of the radius OP.



Answer _____

4 *Notice the change!*

P **(4, 2)** is on the circle $x^2 + y^2 = 20$.
Find the gradient of the tangent at P.

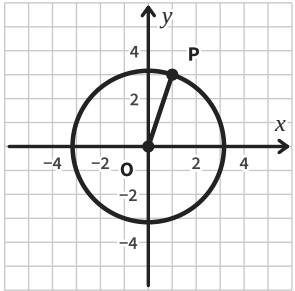


$2 \div 4 = \frac{1}{2}$

Answer _____

5

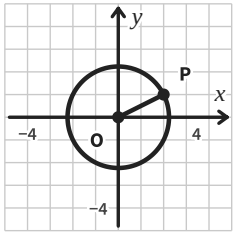
P **(1, 3)** is on the circle $x^2 + y^2 = 10$.
Find the gradient of the tangent at P.



Answer _____

6 *Notice the change!*

P **(2, 1)** is on the circle $x^2 + y^2 = 5$.
Find the equation of the tangent at P.



$1 \div 2 = \frac{1}{2}$

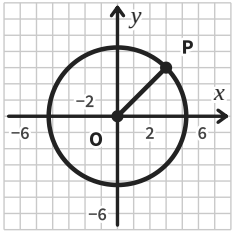
-2

$c =$

Answer _____

7

P **(3, 3)** is on the circle $x^2 + y^2 = 18$.
Find the equation of the tangent at P.



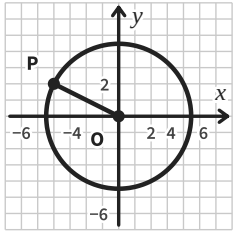
$3 \div 3 = 1$

$c =$

Answer _____

8

P **(−4, 2)** is on the circle $x^2 + y^2 = 20$.
Find the equation of the tangent at P.



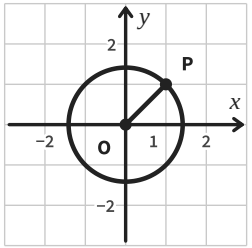
$c =$

Answer _____

Equation of a tangent to a circle *further practice*

9

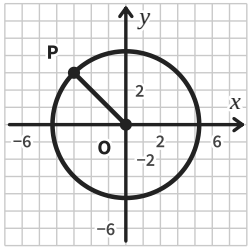
P (1, 1) is on the circle $x^2 + y^2 = 2$.
Find the equation of the tangent at P.



Answer _____

10

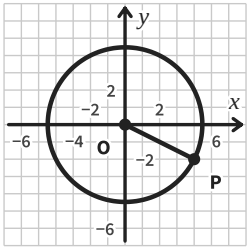
P (−3, 3) is on the circle $x^2 + y^2 = 18$.
Find the equation of the tangent at P.



Answer _____

11

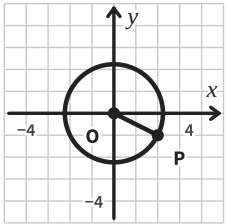
Where does the tangent to $x^2 + y^2 = 20$ at (4, −2) cross the y axis?



Answer _____

12

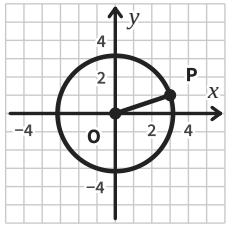
A bike wheel is the circle $x^2 + y^2 = 5$.
The road touches it at (2, −1).
Is the road the line $y = 2x - 5$?
Show how you know.



Answer _____

13

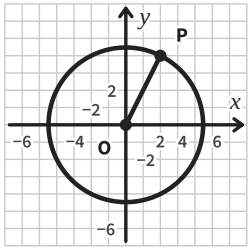
A stone on a string goes round the circle $x^2 + y^2 = 10$, in metres. It is let go at (3, 1) and flies along the tangent.
Find the equation of its path.



Answer _____

14

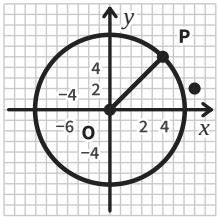
P (2, 4) is on the circle $x^2 + y^2 = 20$.
Find the equation of the tangent at P.



Answer _____

15

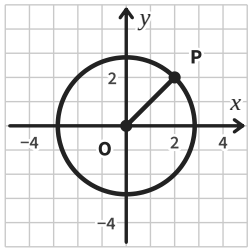
A race track is the circle $x^2 + y^2 = 50$.
A car skids off at (5, 5) along the tangent. Does it pass through the point (8, 2)? Show how you know.



Answer _____

16

Lily says the tangent to $x^2 + y^2 = 8$ at (2, 2) is $y = x$. Explain her mistake and find the right equation.



Answer _____