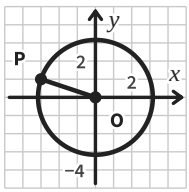
Equation of a tangent to a circle

Exit ticket ANSWERS Name _____

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



$-\frac{1}{3}$

2 Find the gradient of the tangent at P.

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3 Find the equation of the tangent at P.

$y = 3x + 10$

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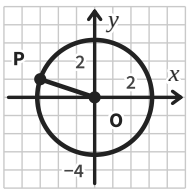

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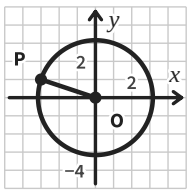

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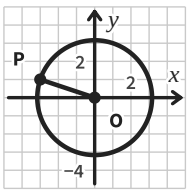

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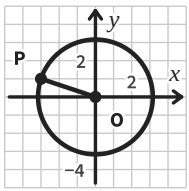

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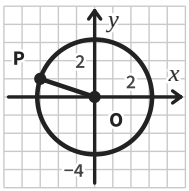

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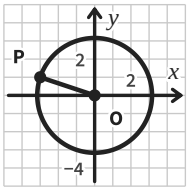

$-\frac{1}{3}$

TESTS The gradient of the radius OP, rise ÷ run

LOOK FOR

-3 run ÷ rise: the gradient is the rise ÷ the run

$\frac{1}{3}$ the sign lost: from O to P goes left

FIX IT

P (2, −6) is on the circle $x^2 + y^2 = 40$. Find the gradient of the radius OP. -3

2 **Find the gradient of the tangent at P.**

3

TESTS The gradient of the tangent: at 90° to the radius

LOOK FOR

$-\frac{1}{3}$ the radius's gradient used for the tangent

-3 flipped, but the sign not changed

FIX IT

The radius OP has gradient $\frac{1}{4}$. Find the gradient of the tangent at P. -4

3 **Find the equation of the tangent at P.**

$y = 3x + 10$

TESTS The equation of the tangent: c from the point P

LOOK FOR

$y = 3x - 8$ 3 × (−3) is −9, not 9

$y = -\frac{1}{3}x$ the radius's gradient: that line is the radius

FIX IT

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