

Maths

Find the Equation of a Tangent to a Circle at a Given Point

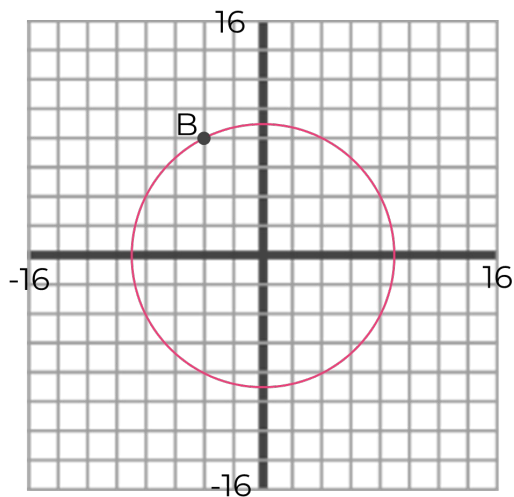
Miss Davies

Please note some slides do have colour font on them

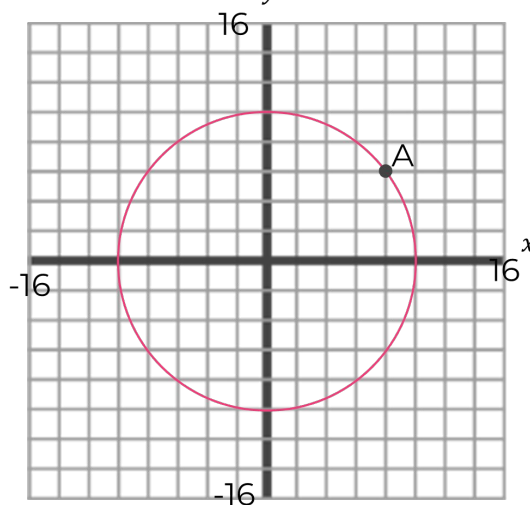


Equation of a tangent

1. Find the equation of the tangent to the circle at point B.



2. Find the equation of the tangent to the circle at point A. Write the equation in the form $ax + by + c = 0$



Equation of a tangent

3. The circle $x^2 + y^2 = 50$ has tangents at $(7, -1)$ and $(5, 5)$. Find the point of intersection of the two tangents.

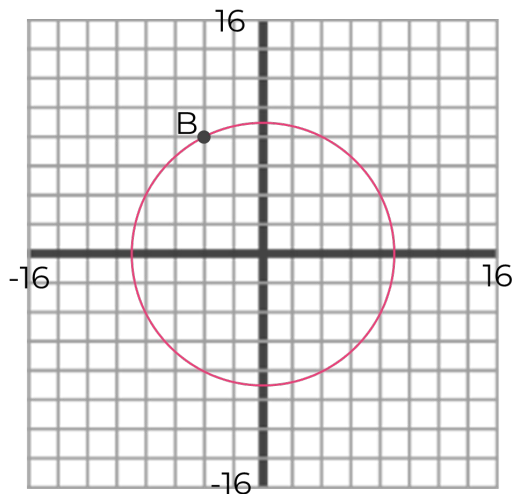


Answers



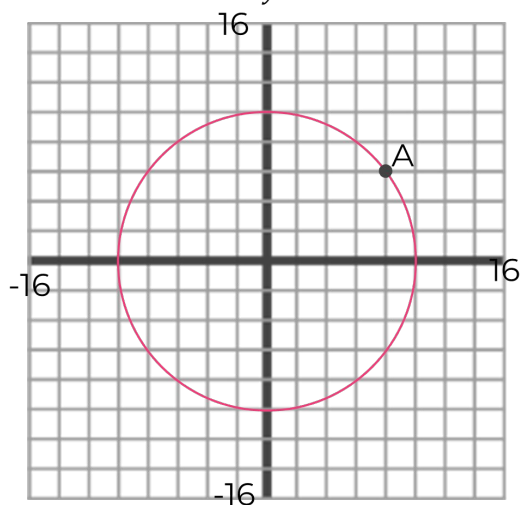
Equation of a tangent

1. Find the equation of the tangent to the circle at point B.



Point B is
 $(-4, 8)$
Gradient of
radius is -2
Gradient of
tangent is $\frac{1}{2}$
Sub A into
 $y = \frac{1}{2}x + c$
 $c = 10$
 $y = \frac{1}{2}x + 10$

2. Find the equation of the tangent to the circle at point A. Write the equation in the form $ax + by + c = 0$



Point A is $(8, 6)$
Gradient of radius is $\frac{3}{4}$
Gradient of tangent
is $-\frac{4}{3}$
Sub A into
 $y = -\frac{4}{3}x + c$
 $c = \frac{50}{3}$
 $y = -\frac{4}{3}x + \frac{50}{3}$
 $4x + 3y - 50 = 0$



Equation of a tangent

3. The circle $x^2 + y^2 = 50$ has tangents at $(7, -1)$ and $(5, 5)$. Find the point of intersection of the two tangents.

Equation of the tangent at $(7, -1)$: $y = 7x - 50$

Equation of the tangent at $(5, 5)$: $y = -x + 10$

Point of intersection is $(7.5, 2.5)$

