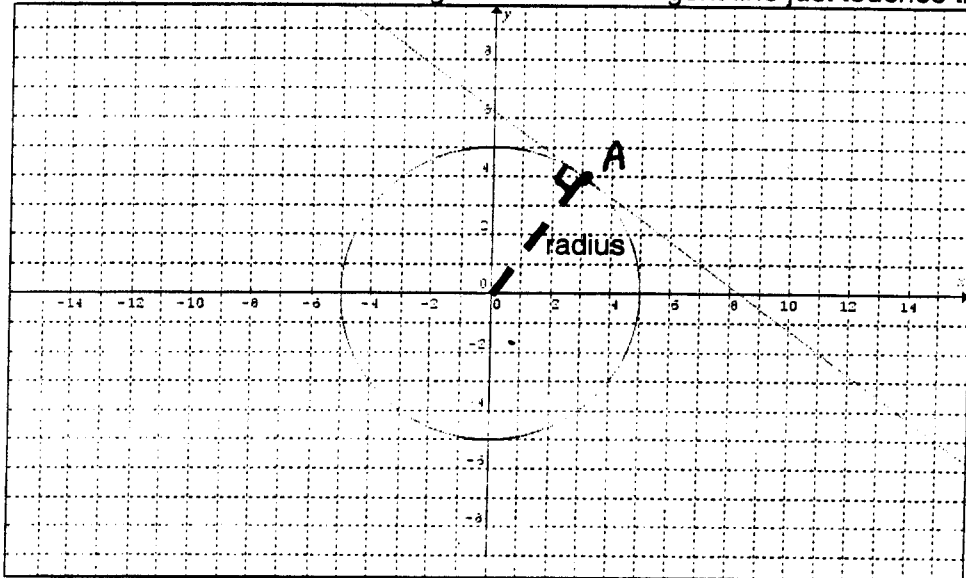


### Finding the equation of a tangent line

Problem: Determine the equation of the tangent to the circle  $x^2 + y^2 = 25$  at the point A (3,4) in slope-intercept form and standard form.

Solution:

First draw the circle and the tangent line. The tangent line just touches the circle.



Notice at the spot where the tangent touches the circle the line is perpendicular to the radius.

The slope of the radius is  $\frac{4}{3}$  and this means the slope of the tangent will be  $-\frac{3}{4}$

Therefore the equation of the tangent is :

$$y = -\frac{3}{4}(x-3) + 4$$

For Homework

Try finding the equation of the tangent to the circle

- $x^2 + y^2 = 169$  at the point (5,12),
- $x^2 + y^2 = 100$  at the point (6, 8) .
- $x^2 + y^2 = 225$  at the point (12, 9) .