

Circle 3

Open Problems

These can be used as starters, plenaries or assessments. The important thing is that students should justify their answers in all cases.

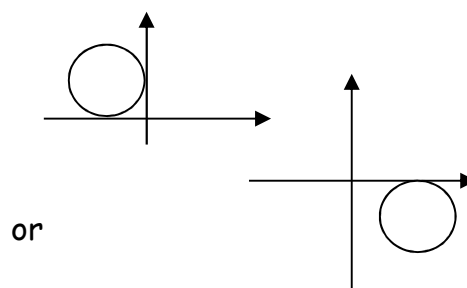
Give me an equation of a circle of radius 6.

Give me an equation of a circle centre $(-1, 3)$.

Give me equations of two circles with the same centre.

Give me equations of circles with the same radius.

Give me possible equation for the circle
(or all sorts of positions for the circle)



Give an equation of a circle to the whole class eg $x^2 + y^2 = 5$.

Students give the equations of lines they think will be a tangent to the circle.

Students then have to test the line to see whether or not it is a tangent. The aim is for students to identify criteria for the three states,

i) line intersects with the circle

ii) line is a tangent

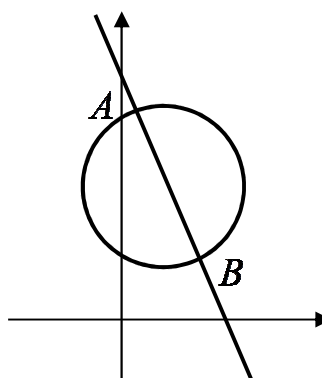
iii) line does not intersect with the circle.

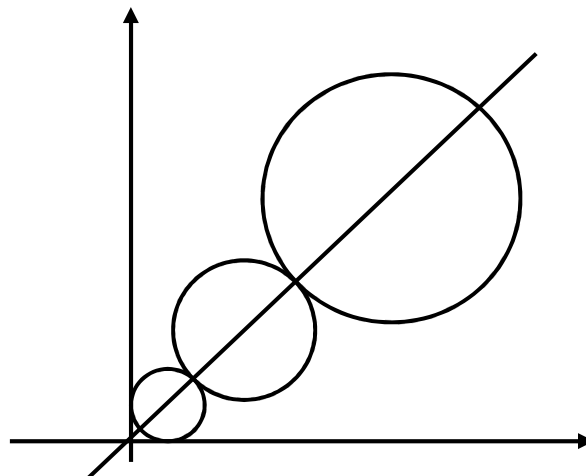
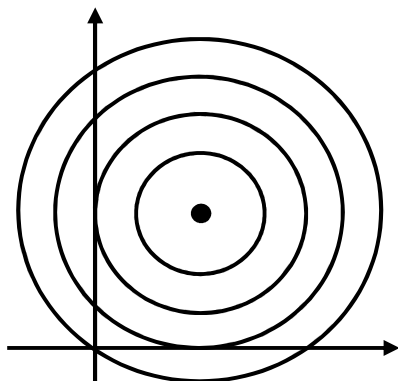
Once students have tested a line they should stick their equation and working onto a whole class poster which has the circle in the middle and regions denoting the three states above.

The equation of a circle is $(x - 4)^2 + (y - 6)^2 = 25$.

A line has equation $3y = -4x + 34$ and crosses the circle at A and B.

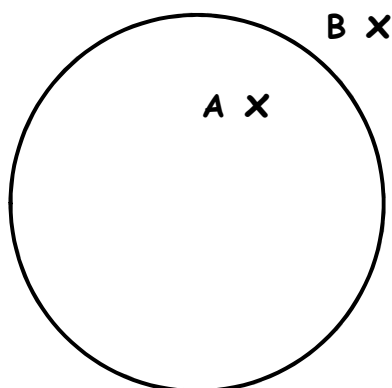
Is AB a diameter?
How do you know?





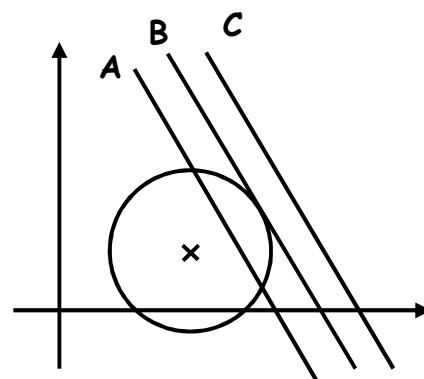
Find possible equations for these circles.

$$x^2 + 4x + y^2 + 6y = 12$$



Find possible coordinates for the points A and B.

A circle has equation $(x-5)^2 + (y-1)^2 = 2$
 Which of these lines has equation: $y = -x + 8$
 Explain how you got your answer



A circle passes through $(0, 1)$ and $(0, 5)$.

What else might be true about it? Justify your answers.