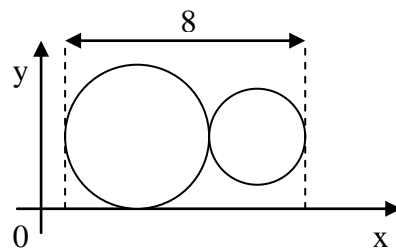


1.  $AB$  is the diameter of a circle, where  $A$  is  $(2, 5)$  and  $B$  is  $(-4, -3)$ .  
What is the equation of the circle?
2. The point  $(-5, 3)$  lies on the circumference of the circle  
 $x^2 + y^2 + ax - 6y + 4 = 0$ . Find the value of  $a$ .
3. State the centre and radius of the circle  
 $x^2 + y^2 + 8x - 14y + 1 = 0$
4. Show that the line  $3x - y + 6 = 0$  is a tangent to the circle  
 $x^2 + y^2 + 14x - 10y + 34 = 0$  and find the point of contact.
5. The point  $P(5, 7)$  lies on the circle  $(x - 2)^2 + (y - 3)^2 = 25$ .  
What is the equation of the tangent at  $P$ ?

6. The diagram shows two circles with centres lying on a horizontal line.  
The equation of the larger circle is  $x^2 + y^2 - 12x - 6y + 36 = 0$ .  
Find the equation of the smaller circle.



7. A circle,  $x^2 + y^2 - 2x - 10y + 6 = 0$  is cut by a line,  $x - 3y + 4 = 0$ .

- a) Find the two points of intersection
- b) These two points are the end-points of the diameter of another circle. Find the equation of this circle.
- c) Decide whether the point  $(0, 4)$  lies within, on or outwith the second circle.

