Explain the equation of the circle in terms of transformations of a circle centre the origin.

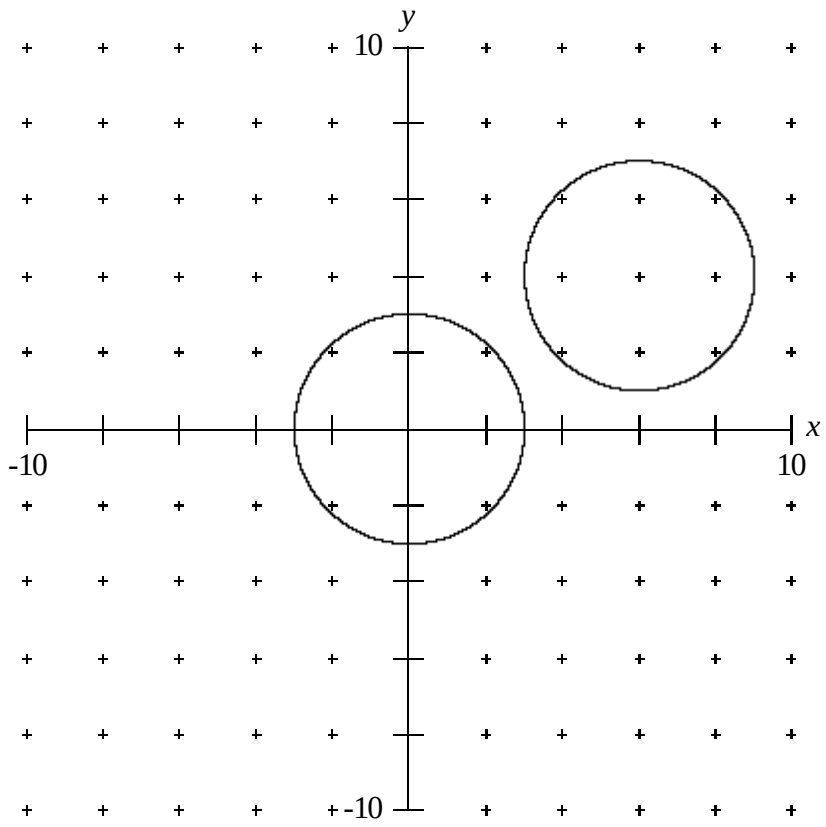
Consider a circle centre the origin and radius 3 units.

The distance rule / Pythagoras' Theorem gives the equation:

$$x^2 + y^2 = 3^2$$

If this circle is translated 6 units in the x direction and 4 units in the y direction, then:

- the centre becomes $(6, 4)$
- the equation of the transformed circle is found by replacing:
  x by $x - 6$
  y by $y - 4$



The equation is:

$$(x - 6)^2 + (y - 4)^2 = 3^2$$