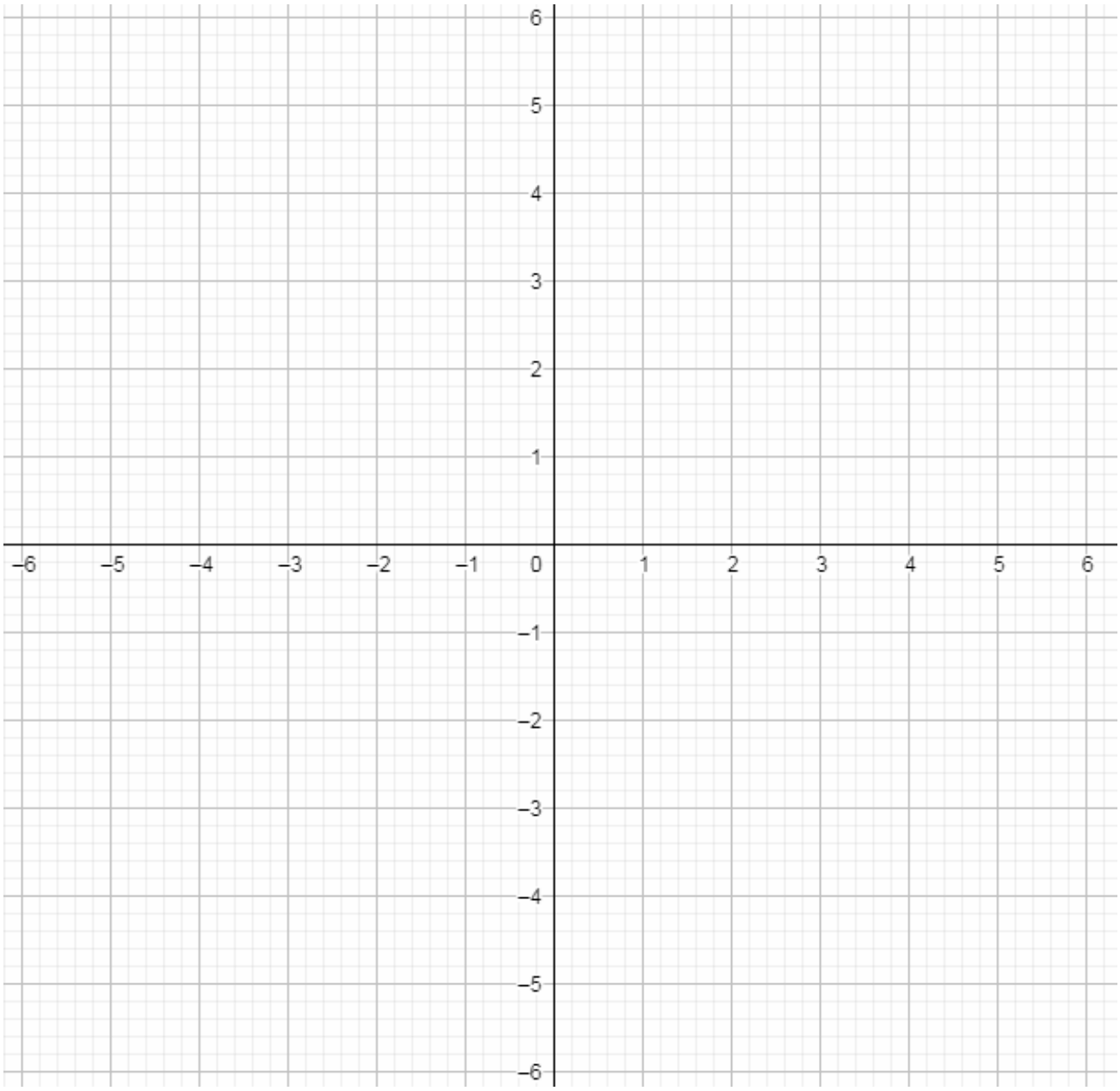
Equation of a Circle 1 – www.m4ths.com

(1) (a) Draw as many points as that are 5 units from the origin as you can.



(b) Draw a graph that goes through the points you have plotted. (You can use a compass)

(c) Try and find an equation for your graph!

(2) (a) State the length of the radius of the circle with equation $x^2 + y^2 = 100$

(b) Sketch the graph of $x^2 + y^2 = 100$ showing any points of intersection with the coordinate axes.

(c) Write down 3 different points that lie on the circle.

(3) (a) State the length of the radius of the circle with equation $x^2 + y^2 = 16$

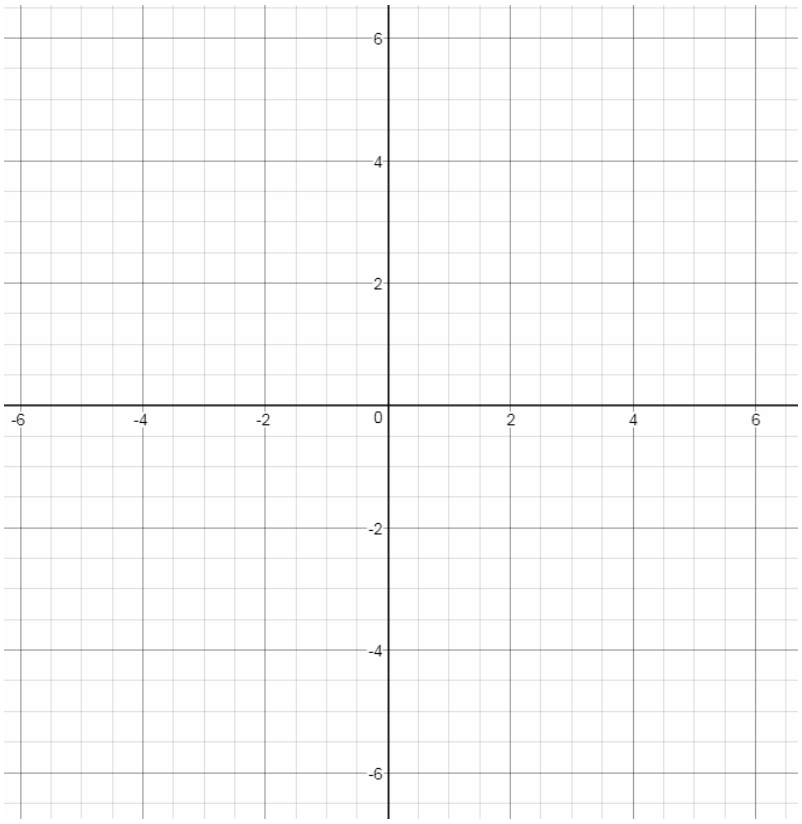
(b) Sketch the graph of $x^2 + y^2 = 16$ showing any points of intersection with the coordinate axes.

(c) Write down 1 point that (a) lies on the circle, (b) lies inside the circle and (c) lies outside the circle. You must use algebra to show each.

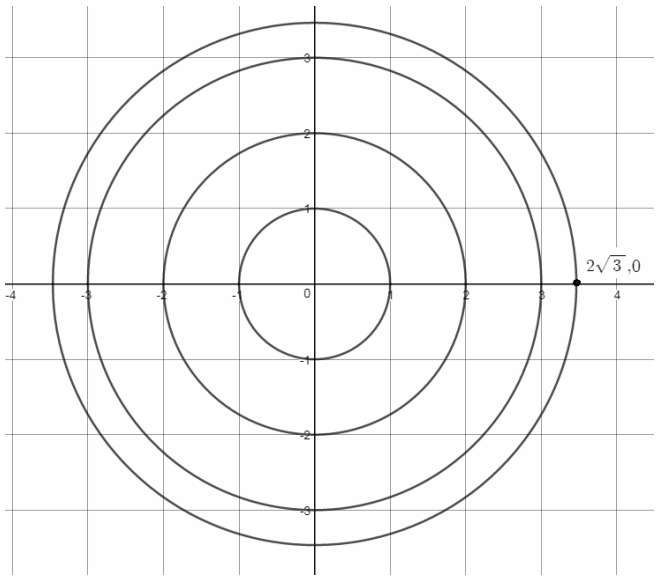
(d) Write down a common error that students may make when stating the length of the radius of $x^2 + y^2 = 16$

(4) Sketch each of the following equations showing any points of intersection with the coordinate axes.

$x^2 + y^2 = 1$ $x^2 + y^2 = 36$ $x^2 + y^2 = 9$ $x^2 + y^2 = 8$ $x^2 + y^2 = r^2$



(5) Write down the equation of each graph below.



(6) (a) Write down where the line $y = 2$ meets the second smallest circle above.

(b) Find where the line $y = 2$ intersects the largest circle above. Leave your answer as surds.

Extension

(8) Find the equation of the tangent to the circle $x^2 + y^2 = 25$ at the point (3,4).

(9) Find the equation of the tangent to the circle $x^2 + y^2 = 100$ at the point (-6,8).