2013 11g Sketch the region defined by $(x - 2)^2 + (y - 3)^2 \geq 4$. **3**

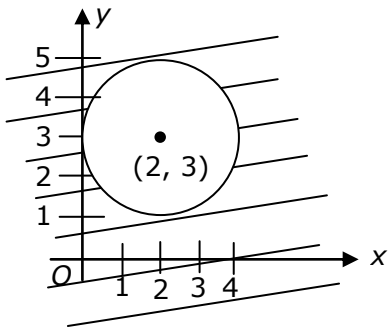
$(x - 2)^2 + (y - 3)^2 \geq 4$

Circle, centre (2, 3), radius = 2

Check (0, 0):

$\therefore (0 - 2)^2 + (0 - 3)^2 \geq 4$?

Yes!



State Mean: **2.02**

Board of Studies: Notes from the Marking Centre

In successful responses, candidates linked the radius of 2 with the centre of the circle at (2,3), thus drawing a circle that is tangential to the y-axis. They also considered the coordinates of the points on the circumference of the circle in the north, south, east and west positions.

Common problems were:

- not finding the centre or radius of the circle correctly and hence when they tested a point to find where to shade, their conclusions were incorrect
- drawing graphs poorly, so that the important features were not clearly distinguishable
- shading so lightly on the graphs that it was difficult to see if the shading surrounded the whole circle
- algebraic attempts to solve for x and y with no attempt at a sketch
- confusing the circle equation with that of the parabola and attempting to find vertex, focus and directrix and then sketching a parabola.

Source: **http://www.boardofstudies.nsw.edu.au/hsc_exams/**