

8 A circle, C , has equation $x^2 - 6x + y^2 = 16$.

A second circle, D , has the following properties:

- The line through the centres of circle C and circle D has gradient 1.
- Circle D touches circle C at exactly one point.
- The centre of circle D lies in the first quadrant.
- Circle D has the same radius as circle C .

Find the coordinates of the centre of circle D .

[5]