

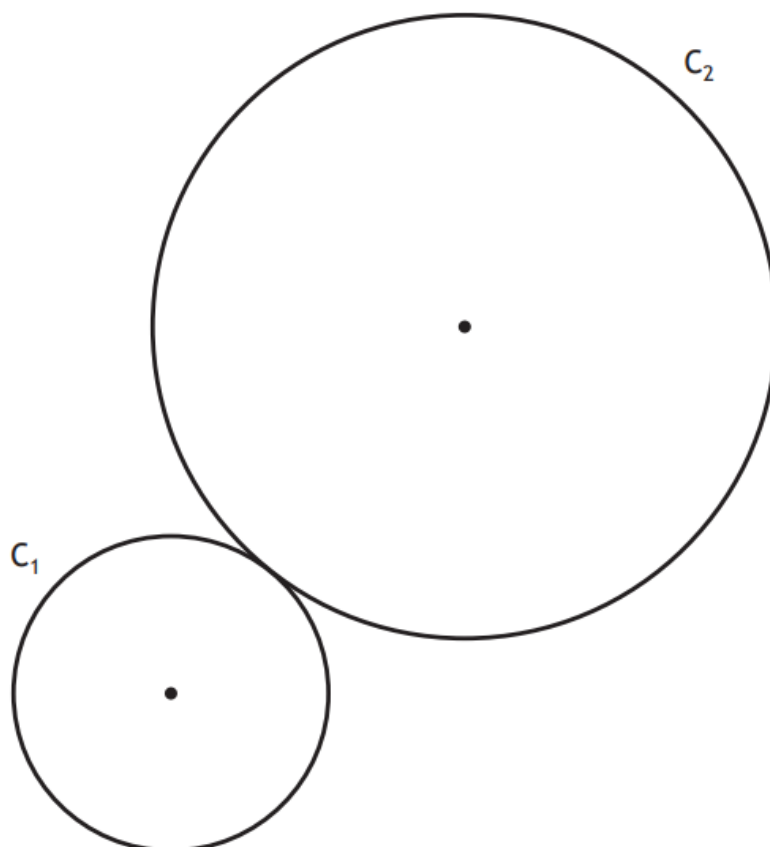
Higher Maths  
SQA 2015 Paper 2  
Question 5



Circle  $C_1$  has equation  $x^2 + y^2 + 6x + 10y + 9 = 0$ .

The centre of circle  $C_2$  is  $(9, 11)$ .

Circles  $C_1$  and  $C_2$  touch externally.



(a) Determine the radius of  $C_2$ .

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A third circle,  $C_3$ , is drawn such that:

- both  $C_1$  and  $C_2$  touch  $C_3$  internally
- the centres of  $C_1$ ,  $C_2$  and  $C_3$  are collinear.

(b) Determine the equation of  $C_3$ .

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Answers:

(a) 15

(b)  $(x - 6)^2 + (y - 7)^2 = 400$