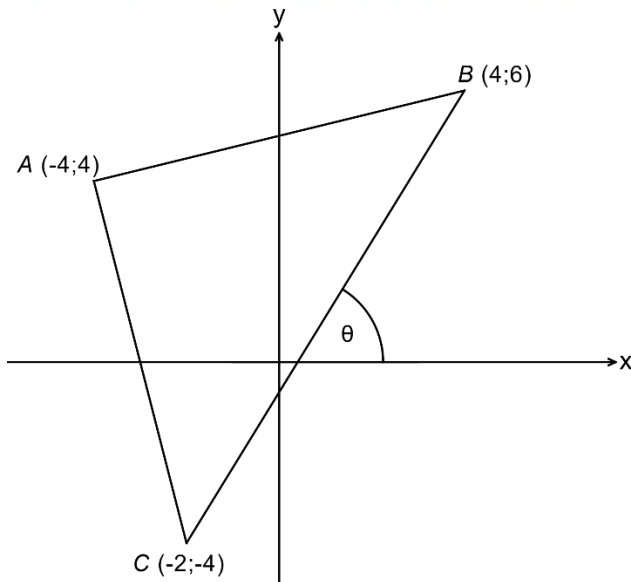


## Resource for Day 2 – Analytical Geometry – Friday 20 October

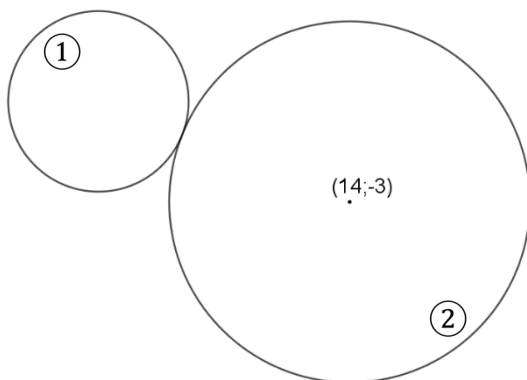
1. Consider the diagram and answer the questions alongside:



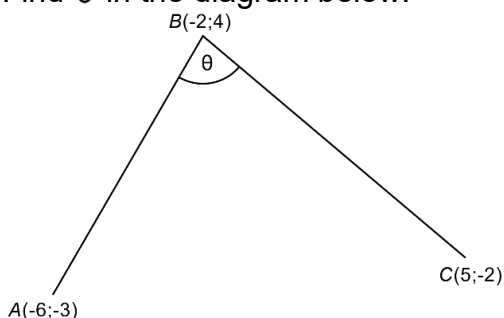
- Prove that  $\hat{BAC} = 90^\circ$  (3)
- Determine area  $\triangle ABC$  (3)
- Find the midpoint of  $BC$  (2)
- Find the size of  $\theta$  (2)
- Find the equation of  $AB$  (3)
- Find the coordinates of  $D$  if  $ABDC$  is a parallelogram (3)
- Find the equation of a circle centre  $A$  which has the  $y$ -axis as a **tangent** (3)
- Find point  $E$  if  $AB : AE = 1 : 3$  (4)
- Find value(s) of  $k$  if  $F(k;9)$  is 5 units from  $B$ . (4)

2. Find the equation of the tangent to the circle  $x^2 + y^2 - 6x + 4y = 19$  at the point  $A(7;2)$  (5)

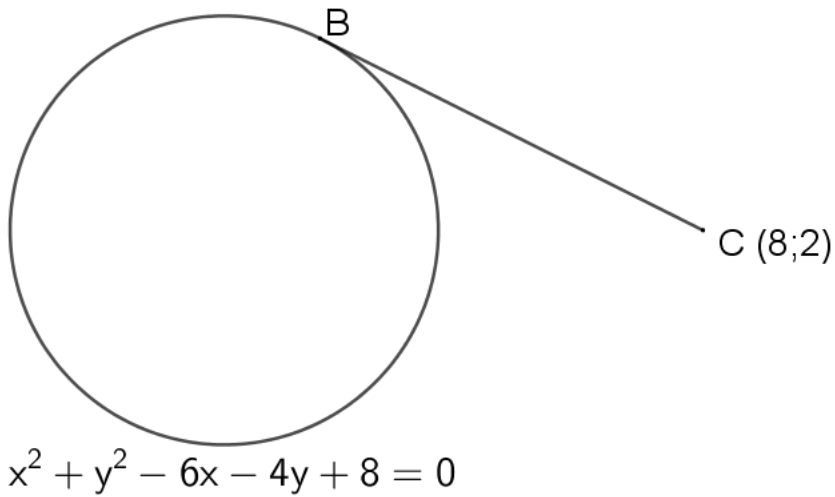
3. Consider the circle  $x^2 + 2x + y^2 - 6y = 19$ . It is depicted below as circle ①  
Find the equation of circle ② which has a centre at  $(14;-3)$  and **touches** circle ① (6)



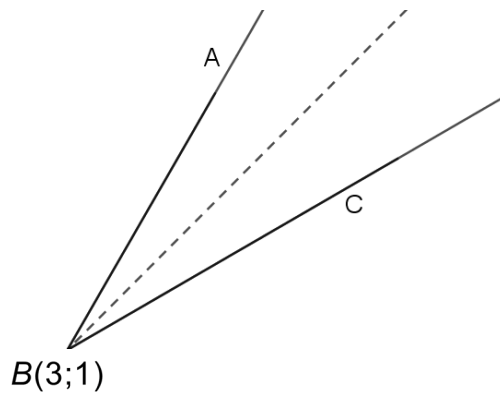
4. Find  $\theta$  in the diagram below: (6)



5. Find the length of the tangent below



6. The dashed line is the bisector of  $\hat{ABC}$ . Find its equation if the gradient  $AB = \sqrt{3}$  and the gradient of  $BC = \frac{\sqrt{3}}{3}$



7. Find the centre of the circle below. Hint: the perpendicular bisector of a chord passes through the centre of the circle!

