

## Circle Coordinate Geometry Questions 4

### Exercise 5F

*If a diagram is not given, drawing a sketch may help.*

- ① AB is a diameter of a circle. P is a point on the circumference of the circle.  
A is (2, 8) and P is (4, -2).  
Work out the gradient of BP.
- ② A circle has centre C.  
RS is a chord of the circle and R is (-1, 6).  
Y(2, 3) is a point on RS such that angle CYR =  $90^\circ$ .  
Work out the coordinates of S.

- ③ Look at Figure 5.30.  
 AB is a diameter of the circle.  
 A is  $(k, 5)$ , P is  $(3, 8)$  and B is  $(7, 2)$ .  
 Work out the value of  $k$ .

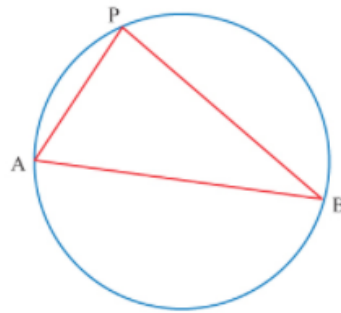


Figure 5.30

- ④ Figure 5.31 shows a circle, centre C.  
 AB is a chord of a circle.  
 D is a point on AB such that angle ADC is  $90^\circ$ .  
 Work out the equation of the line that passes through A and C.

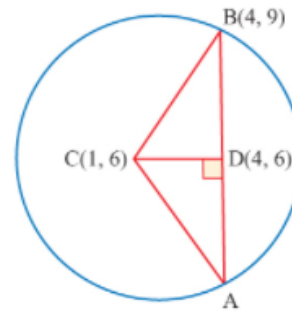


Figure 5.31

- ⑤ Look at Figure 5.32.  $T(3, -4)$  is a point on the circumference of the circle  $x^2 + y^2 = 25$

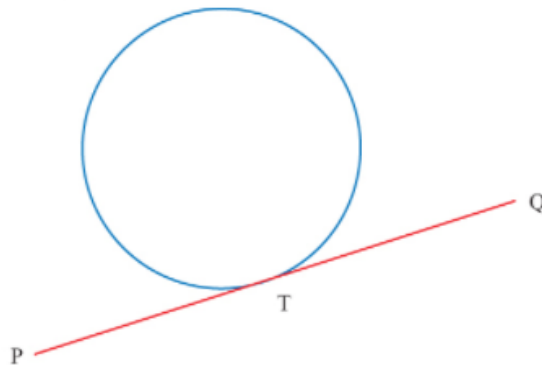


Figure 5.32

Work out the equation of the tangent PTQ.  
 Give your answer in the form  $y = mx + c$ .

- ⑥ Figure 5.33 shows a circle that intersects the  $x$ -axis at  $(-2, 0)$  and  $(6, 0)$ .  
 The centre of the circle is  $(a, 3)$ .  
 Work out the equation of the circle.

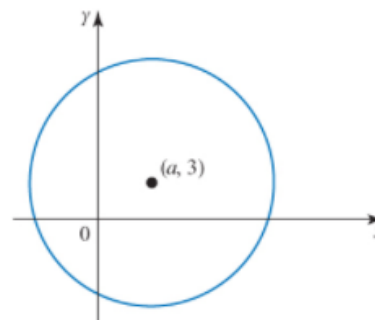


Figure 5.33

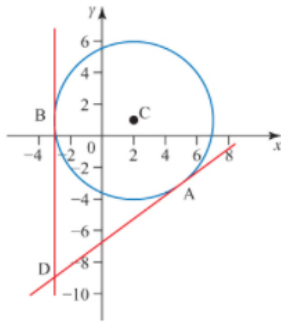


Figure 5.34

- ⑦ Figure 5.34 shows a circle with centre  $C(2, 1)$  and radius 5 units together with the tangent at the point  $A(5, -3)$ .
- Write down the equation of the circle.
  - Work out the equation of the tangent and verify that the point  $D(-3, -9)$  lies on the tangent.
  - Write down the equation of the other tangent through the point  $D(-3, -9)$  and state the coordinates of the point  $B$  where this touches the circle.
  - Work out the lengths of the two tangents from  $D$  to the circle.

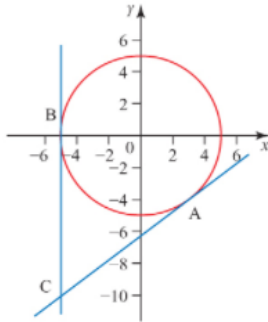


Figure 5.35

- ⑧ Figure 5.35 shows a circle  $x^2 + y^2 = 25$  together with the tangent to the circle at the point  $A(3, -4)$ .
- Show that the tangent at  $A$  has equation  $3x - 4y - 25 = 0$
  - Write down the equation of the tangent to the circle at the point  $B(-5, 0)$ .
  - Work out the coordinates of the point of intersection,  $C$ , of these tangents.
  - Show, by calculation, that  $CA = CB$ .