

AQA

Pure Mathematics, Statistics and Mechanics 1

分类真题

2018-2022 册

A Level Clouds 出品

# 目录

<b>Chapter 1 Coordinate Geometry and Circles</b>	<b>1</b>
<b>Chapter 2 Trigonometry</b>	<b>17</b>
<b>Chapter 3 Trigonometric Functions and Equations</b>	<b>24</b>
<b>Chapter 4 Exponentials and Logarithms</b>	<b>55</b>
<b>Chapter 5 Probability</b>	<b>72</b>
<b>Chapter 6 Discrete Random Variables</b>	<b>87</b>
<b>Chapter 7 Bernoulli and Binomial Distributions</b>	<b>102</b>
<b>Chapter 8 Displacement, Speed, Velocity and Acceleration</b>	<b>116</b>
<b>Chapter 9 Motion in a Straight Line</b>	<b>122</b>
<b>Chapter 10 Forces and Newton's Laws</b>	<b>136</b>
<b>Chapter 11 Momentum and Impulse</b>	<b>148</b>

# **Chapter 1**

## **Coordinate Geometry and Circles**

2 The circle  $C$  has centre  $P$  and equation  $x^2 - 22x + y^2 - 16y + 135 = 0$

2 (a) (i) Write the equation of  $C$  in the form

$$(x - a)^2 + (y - b)^2 = k$$

[2 marks]

---

---

---

---

---

---

Answer \_\_\_\_\_

2 (a) (ii) State the radius of  $C$  and the coordinates of its centre.

[2 marks]

Radius \_\_\_\_\_

Centre \_\_\_\_\_

- 2 (b)** A chord of  $C$  has length 6  
Find the perpendicular distance from the centre  $P$  to this chord.  
Give your answer in the form  $\sqrt{a}$  where  $a$  is an integer.

**[3 marks]**

---

---

---

---

---

---

Answer \_\_\_\_\_

- 2 (c)** A circle  $C'$  with centre at the origin has the same radius as the circle  $C$ .  
Describe fully the transformation that maps  $C$  onto  $C'$ .

**[2 marks]**

---

---

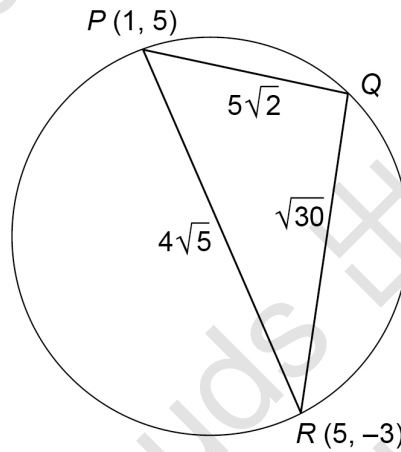
---

---

**6** The diagram shows the circle  $C_1$  and triangle  $PQR$ .

The points  $P$ ,  $Q$  and  $R$  lie on  $C_1$ , where  $P$  has coordinates  $(1, 5)$  and  $R$  has coordinates  $(5, -3)$ .

The lengths  $PQ = 5\sqrt{2}$ ,  $PR = 4\sqrt{5}$ , and  $QR = \sqrt{30}$



**6 (a)** Show that  $PR$  is a diameter of  $C_1$

**[3 marks]**

A Level Clouds

6 (b) Find an equation of the tangent to  $C_1$  at  $P$ .

[3 marks]

---

---

---

---

---

---

---

Answer \_\_\_\_\_

6 (c) A second circle,  $C_2$  has equation  $(x - 9)^2 + (y - 9)^2 = 5$

The circles  $C_1$  and  $C_2$  do **not** intersect.

The point  $S$  lies on  $C_1$  and the point  $T$  lies on  $C_2$

Find the shortest possible length of the line segment  $ST$ , giving your answer in the form  $a + b\sqrt{c}$ , where  $a$ ,  $b$  and  $c$  are integers.

[5 marks]

---

---

---

---

---

---

---

---

---

---

Answer \_\_\_\_\_