Show all work and write all answers in the spaces provided. Maximum marks will be given for correct answers. Where an answer is wrong, some marks may be given for correct method, provided the answer is supported by written work.

1. Given the points $A(3,-1)$ and $B(5,-5)$.

   a. Find the **distance** between point A and point B.

      (2 marks)

   b. Find the **midpoint** of the segment that joins point A and point B.

      (2 marks)

   c. Find an **equation of the line** perpendicular to the segment that joins point A and point B and that passes through its midpoint.

      (3 marks)

2. Write down the equation of a circle whose radius is $\sqrt{7}$ and whose center is (-4, 1).

(2 marks)

3. Given that (-1, -1) and (9, 3) are endpoints of a diameter, find the equation of the circle.

(4 marks)

4. Show that the point (3, - 6) lies on the circle $(x+2)^2 + (y-6)^2 = 169$

(2 marks)

5. Find the y-intercepts of the circle $(x-3)^2 + (y-5)^2 = 90$

(3 marks)

6. Find the equation of a circle with center (- 6, 5) and that contains the point (-8, 1).

(4 marks)

7. A triangle has vertices at A(-3,-1), B(3,5) and C(7,-3). Determine an equation for the median from vertex A.

(4 marks)

8. Find the distance from the point (10, -16) to the line $y = \frac{1}{3}x - 6$.

(3 marks)