

6 AB is a diameter of a circle where A is $(1, 4)$ and B is $(7, -2)$

6 (a) Find the coordinates of the midpoint of AB .

[1 mark]

6 (b) Show that the equation of the circle may be written as

$$x^2 + y^2 - 8x - 2y = 1$$

[4 marks]

6 (c) The circle has centre C and crosses the x -axis at points D and E .

Find the exact area of triangle DEC .

[4 marks]