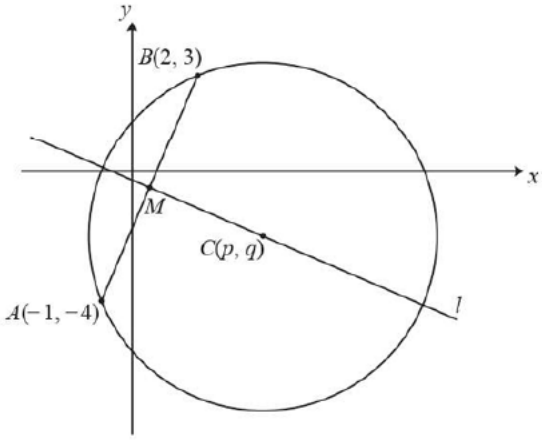
7




The point $A(-1,-4)$ and the point $B(2,3)$ both lie on a circle with centre $C(p,q)$, where $p > 0$ and $q < 0$.

The point $M$ is the midpoint of the chord $AB$.

The line $l$ passes through $M$ and $C$ (see diagram).

**(a)** Determine the equation of $l$. Give your answer in the form $y = mx + c$, where $m$ and $c$ are constants to be determined. **[5]**

**(b)** You are given that the distance between $M$ and $C$ is $\frac{\sqrt{58}}{2}$ units.

Determine an equation for the circle. Give your answer in the form $(x-p)^2 + (y-q)^2 = r^2$, where $p$, $q$ and $r$ are constants to be determined. **[6]**