6B Perpendicular Bisectors of Line Segments

1. The line AB is the diameter of the circle with centre C, where A and B are (-1, 4) and (5, 2) respectively. The line l passes through C and is perpendicular to AB. Find the equation of l.

2. The line PQ is the Chord of the circle, centre (-3,5), where P and Q are (5,4) and (1,12) respectively. The line l is perpendicular to PQ and bisects it. Show that it passes through the centre of the circle.

3. The lines AB and CD are chords of a circle. The line $y = 3x – 11$ is the perpendicular bisector of AB. The line $y = -x – 1$ is the perpendicular bisector of CD. Find the coordinates of the circle's centre.