

8 In this question you must show detailed reasoning.

The lines $y = \frac{1}{2}x$ and $y = -\frac{1}{2}x$ are tangents to a circle at $(2, 1)$ and $(-2, 1)$ respectively. Find the equation of the circle in the form $x^2 + y^2 + ax + by + c = 0$, where a , b and c are constants. **[6]**