1. Given the points \( A(1, 3, 4) \) and \( B(-3, 7, 16) \), find

(a) the vector \( \overrightarrow{AB} \)

(b) the distance \( |AB| \)

(c) a unit vector in the same direction as \( \overrightarrow{AB} \)

2. Find the centre and radius of the sphere \( x^2 - 2x + y^2 + 6y + z^2 - 4z = 34 \).
3. [5] Find the angle between the vectors $(1, 2, 3)$ and $(-1, 0, -1)$. Express your answer both exactly (using inverse trig functions, if appropriate) and as an answer in degrees correct to two decimal places.