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Section B. Electromagnetism

1. An infinite cylinder of radius R oriented parallel to the z-axis has uniform magnetization parallel to the x-axis, $\mathbf{M} = m_0\hat{x}$.

   Calculate the fields $\mathbf{H}$ and $\mathbf{B}$ everywhere inside and outside the cylinder. Sketch $\mathbf{B}$, $\mathbf{H}$ and $\mathbf{M}$.