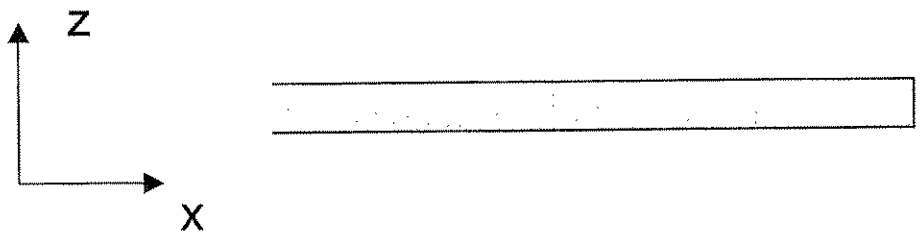
EE Qual 08, Engineering Phys.
Shan Wang

1. Write down the Maxwell equations. [2 pt]
2. Electric field is in general equivalently described by electric potential, why is magnetic field often described by both vector potential and scalar potential? [2 pt]
3. Consider a semi-infinitely long (x direction) and infinitely wide (y direction) but very thin (z direction) magnetic bar with a uniform magnetization ***M*** along the z direction. Derive the magnetic field outside the magnetic bar. [4 pt]



4. Sketch the scalar potential of the magnetic field above. [2 pt]