1. Jackson Problem 2.7

2. Jackson Problem 2.10

3. Image charges and Green's function for cylinder.
   (i) A line charge with linear charge density \( \tau \) is located at position \((\rho', \phi')\) and is placed parallel to and inside a grounded conducting cylinder of radius \( b \), where the origin is on the axis of the cylinder. Find the magnitude and position of the image charge(s).
   
   (ii) Find the potential at any point \((\rho, \phi)\) inside the cylinder when the line charge \( \tau \) is at point \((\rho', \phi')\).

   (iii) Use your results from parts (i) and (ii) to find the Green's function for the interior Dirichlet problem of a cylinder of radius \( b \). Show it can be written in closed form as either of the expressions given by Jackson in Problem 2.18(a).

   (iv) Problem 2.18 (b).

   (v) Problem 2.18 (c).

4. Jackson Problem 2.23