Physics 8110 - Electromagnetic Theory II

Assignment #1
(due to Wednesday – Jan 25, 2017)

1. Problem 5.1, Jackson textbook.
   (10 Points)

2. Problem 5.3, Jackson textbook.
   (15 Points)

3. Find the vector potential of an infinite solenoid with $N$ turns per unit length, radius $R$, and current $I$.
   (15 Points)

4. Find the magnetic vector potential at a point between two long, straight wires carrying the same current $I$, in opposite directions.
   (15 Points)

5. Problem 6.11, Jackson textbook.
   (15 Points)

   (20 Points)

7. Calculate the Poynting vector and its divergence for an infinitely long cylindrical conductor with radius $a$ carrying uniform current density $J$ due to a uniform electric field $E$ parallel to the axis of the conductor inside the conductor.
   (10 Points)