PHYSICS II: Problem Set 6

P6.1 : Giancoli 25.10.

P6.2 : The first telegraph across the Atlantic used a 3000 km cable of copper (diameter 1.9 mm, resistivity of (bad) copper $3 \times 10^{-6}$ $\Omega$ cm). A return path was provided by the ocean (resistivity 25 $\Omega$ cm). (a) Calculate the resistance of the cable. (b) Estimate the resistance of the return path.

P6.3 : An electric transmission cable made of copper (resistivity $1.7 \times 10^{-8}$ $\Omega$ m) is 2 cm in diameter, 100 km long, and carries a 1000 A current. Electricity is 10 cents per kWh. What is the cost of the power dissipated in the cable in one year.