

# Electromagnetic Theory II

## Problem Set 9

Due: 25 March 2021

33. J, Problem 8.18. Orthogonality of solutions of the Helmholtz equation.
34. Two charges,  $+q$  and  $-q$ , separated by a fixed distance  $d$  rotate at constant angular velocity  $\omega$  in the  $xy$ -plane about the  $z$ -axis which bisects the line joining the charges.
- Calculate the power radiated per unit solid angle by this system in the dipole approximation.
  - Discuss the polarization and relative intensity of the radiation emitted (*i*) in the plane of motion and (*ii*) along the axis of rotation.
35. J, Problem 9.2. Radiation from a rotating quadrupole.