

ECEn 560
Electromagnetic Wave Theory

Homework #6

Due Jan. 26, 2016 (may be turned in late for half credit)

1. Magnetic charges have not been observed in nature, but it is often convenient in electromagnetics to use fictitious magnetic currents as an aid in solving problems. A magnetic current \bar{M} is a source in Faraday's law defined by $\nabla \times \bar{E} = i\omega\bar{B} - \bar{M}$. Derive a radiation integral for the electric field intensity radiated by a magnetic current source. (Hint: define an *electric* vector potential \bar{F} such that $\bar{D} = -\nabla \times \bar{F}$.)