

HOMework 3

Due: Tuesday , February 21

Problems: Displacement current; Maxwell's equations

7.34, 7.37, and 7.39

Problem 3

The magnetic field $\mathbf{B}(\mathbf{r}, t)$ in a free space is given as $\mathbf{B} = \mathbf{B}_0 \sin(\omega t - \mathbf{k} \cdot \mathbf{r})$, where \mathbf{B}_0 and \mathbf{k} are constant vectors and ω is a positive constant. Determine:

- (a) the displacement current density;
- (b) the electric field.