From Griffiths: 7.23, 7.27, 7.31, 7.35, 7.37, 7.42

1. Consider a static magnetic field given by:

$$\vec{\mathbf{B}} = \frac{B_o(x\hat{\mathbf{x}} - y\hat{\mathbf{y}})}{a}$$

   (a) Show that this field obeys Maxwell's equations in free space.

   (b) Sketch the field lines for this system. Indicate on your sketch where currents would need to be to produce this field.

   (c) If the magnetic field $B_o(t)$ varied slowly with time, what electric field would a stationary observer at (x, y) measure? Neglect any displacement currents.