1.

2. $I = \frac{1}{2}\varepsilon_0 c E_{max}^2; E = 175\ N/C$

3. $\alpha = \frac{\varepsilon_0 a^2 A^2}{2mL}$

4.

   a. $I = \frac{P}{A} = 637\ W/m^2$

   b. $E = \sqrt{\frac{2I}{\varepsilon_0 c}} = 693\ V/m \quad B = \frac{E}{C} = 2.31\ \mu T$

   c. $u_{av} = \frac{I}{c} = 2.12\ x\ 10^{-6}\ J/m^3$

5.

   a. $F_g = \frac{4\rho G\pi M R^3}{3r^2}$

   b. $F_{rad} = \frac{LR^2}{4cr^2}$ Light only radiates on one face of the particle

   c. $R = \frac{3L}{16c\rho G\pi M} = 0.19\ \mu m$. Both F_g and F_{rad} are dependent on r^{-2} which cancels in the final expression. It does not depend on the distance from the sun.

   d. If $R > .19\ \mu m$ the particle would be driven out of the solar system