Homework is from Eisberg and Resnick (E&R) unless otherwise indicated. Please note that "questions" can be answered briefly; "problems" may be more involved.

- 1. Complex numbers review:
 - a. Let $z_1 = a_1 + ib_1$ and $z_2 = a_2 + ib_2$. Show that $|z_1 z_2| = |z_1| |z_2|$.
 - b. Write the following complex numbers in polar form: (i) $2 + 2\sqrt{3}i$ (ii) -5 + 5i (iii) -3i (iv) 3.14159.
 - c. Let $z_1 = r_1(\cos\theta_1 + i\sin\theta_1)$ and $z_2 = r_2(\cos\theta_2 + i\sin\theta_2)$. Show that $z_1z_2 = r_1r_2\{\cos(\theta_1 + \theta_2) + i\sin(\theta_1 + \theta_2)\}$. d. Show (i) $\cos\theta = \frac{e^{i\theta} + e^{-i\theta}}{2}$ and (ii) $\sin\theta = \frac{e^{i\theta} - e^{-i\theta}}{2i}$.
- 2. E&R, chapter 5, question 9.
- 3. E&R, chapter 5, question 16.
- 4. E&R, chapter 5, question 17.
- 5. E&R, chapter 5, problem 1.
- 6. E&R, chapter 5, problem 2, parts a, b, c.
- 7. E&R, chapter 5, problem 9.
- 8. E&R, chapter 5, problem 10.