These problems are practice problems. Do **not** turn in your solutions.

Relevant Reading: Chapter 8 (all of it)
Relevant Items in the DSP First CD: Homework problems: Explore all the problems in Chap. 8

1. Consider the system function $H(z)$ for a second-order IIR filter with complex poles:

$$H(z) = \frac{z^2}{(z-p)(z-p^*)},$$

   where $p = re^{j\theta}$. Verify that

$$h[n] = \frac{1}{\sin\theta} r^n \sin(n\theta + \theta)u[n].$$

2. Textbook, Problem 8.10 (b) and (c), pp. 312-3.

   Hint: Use the delay property of z-transform.

3. Textbook, Problem 8.12, p. 313.

4. Textbook, Problem 8.15 (e), p. 315.

   And add: (f) Calculate $y[n]$ for

$$x[n] = \cos(2\pi n/3)u[n].$$

5. Textbook, Problem 7.15, p. 247.

6. Textbook, Problem 8.19, p. 318.