1. Consider the System Function 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

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

2. Textbook, Problem 8.10 (b) and (c), pp. 312-3.
   
   *Hint: Use the delay property of Z-transforms.*

3. Textbook, Problem 8.12, p. 313.

4. Textbook, Problem 8.15 (e), p. 315. And add:

   (f) Calculate \( y[n] \) for \( x[n] = \cos(2\pi n/3) u[n] \).
