EE 322 Advanced Analog Electronics, Spring 2008
Homework #9 Assignment

1. Horowitz & Hill exercise 7.4

2. Design a phase-locked loop (following the general approach outlined by Howorwitz & Hill) which produces an output signal at 1500 Hz from a 1000 Hz input signal. Design the LP filter in accordance with the rules of thumb outlined by Horowitz & Hill, and such that the output will not be affected (to within a decay time at least) by a 0.1 s dropout in the input.

3. Derive an expression for the signal-to-noise ratio of a non-inverting op-amp when the amplifier has a white noise input power spectrum of e_{na}^2, and the resistors produce white noise as well. Express it in terms of the amplifier gain K, the size of one of the resistors, the temperature of the resistors, and the amplitude of the (assumed sinusoidal) input.