Electronics and Instrumentation

Name _____ ENGR-4300 Fall 1999 Section _____

Extra Credit #7

1. Draw a circuit, using a 555 timer, that produces a square wave output with a frequency of 100Hz. Make the output look as much like a square wave as possible. Do a PSpice simulation to show how it works.

2. How would you go about turning this square wave into a triangular wave? Do a PSpice simulation to show how your idea works.

3. How would you go about turning this square wave into a sine wave?

4. Show how you would wire up a 1458 dual op-amp in a voltage follower configuration. Make sure that you are as complete as possible.

5. Assume that you have built two low-pass filters that are to perform as identically as possible. One you build with passive components and one you build using an op-amp. Picking any parameters you wish, draw circuit diagrams for the two filters. Why would we choose to build the filter with the op-amp rather than just with passive components?