Lab 13: Oscillators

I: Digital Clock using "the classic timer chip", the 555: Build the circuit shown in Fig. 5.33 (p. 287) of The Art of Electronics, by Horowitz and Hill. Observe the "output" signal on pin 3 AND the voltage across the capacitor (on pin 2/6). Verify that "digital clock" output has the advertised frequency. Change the resistor R_A to observe the effects on the "symmetry" of the clock pulse.

II. Wien Bridge Sine Wave Oscillator: Build the Wien bridge oscillator circuit shown below in your analog circuit chassis. Verify the predictions that

1. The circuit only oscillates if $R_2/R_1 > 2$, where R_1 and R_2 are the resistors in the negative feedback network connected to the inverting input.
2. The frequency of oscillation is given by $f = 1/2\pi RC$, where R and C are the resistor and capacitor values in the positive feedback network connected to the non-inverting input.