H.W. #21 EE 220 Fall 2020
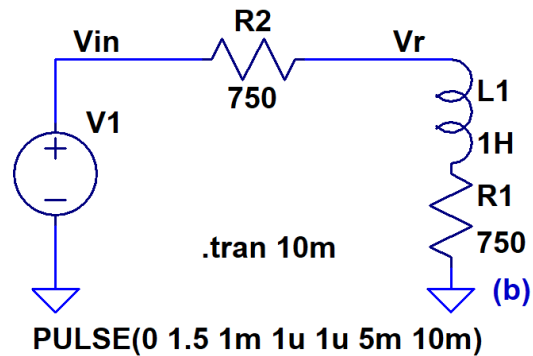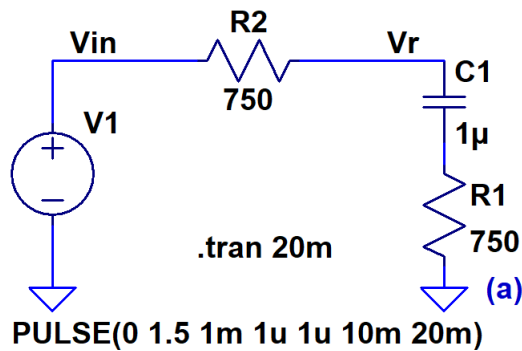
Show your work for credit!

1. Design a circuit that creates a triangle waveform that swings between − 2.5 and + 2.5 V at 10kHz. Assume the input to the circuit is a square-wave that oscillates at 10 kHz between 0 and + 1 V. Show your hand calculations for credit. Verify your design using LTspice. (4 points)

2. Write equations for Vr, and sketch along with Vin, in the following circuits. Verify your answers with LTspice. (2 points)

PULSE(0 1.5 1m 1u 1u 10m 20m)   (a)

PULSE(0 1.5 1m 1u 1u 5m 10m)   (b)

3. Determine Vout for each of the following circuits. Sketch Vout and Vin on the same plot. Show your hand calculations for credit. Verify your answers using LTspice. (8 points)

SINE(0 2 200)   SINE(0 2 1k)   (a)   (b)

SINE(0 2 1k)   (c)   SINE(0 2 1k)   (d)