# ENG-101
Intro Computing Engineers Homework 9

Question 1 (20 Points)

An ideal diode blocks the flow of current in the direction opposite that of the diode's arrow symbol. Based upon this property, the diode can be used to make a half-wave rectifier. For an ideal diode, the voltage v_l across the load is given by: $v_l = \begin{cases} v_s; if\ v_s > 0 \\ 0; otherwise \end{cases}$.

Suppose the supply voltage is $v_s(t) = 3e^{-t/3}\sin(\pi t)\ Volts$.
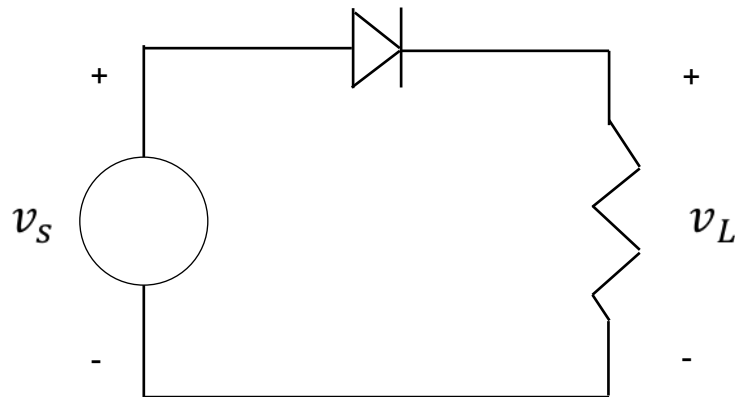
Using <u>vectorizing commands only</u>, write a MATLAB program to plot v_l versus time for ten seconds in the MATLAB script *diode.m*.

Extend your solution for the non-ideal diode case. A non-ideal diode has the characteristic $v_l = \begin{cases} v_s; if\ v_s > 0.6 \\ 0; otherwise \end{cases}$.

Display your results using the subplot command as shown in the figure below. Save your figure in a file named *diode.fig*. Submit your figure along with your program.

Supply Voltage Vs Time

Load Voltage Vs Time - Ideal Diode

Load Voltage Vs Time - NonIdeal Diode
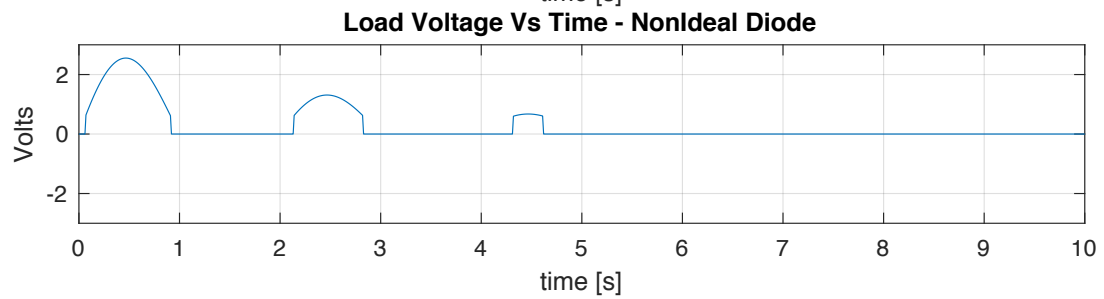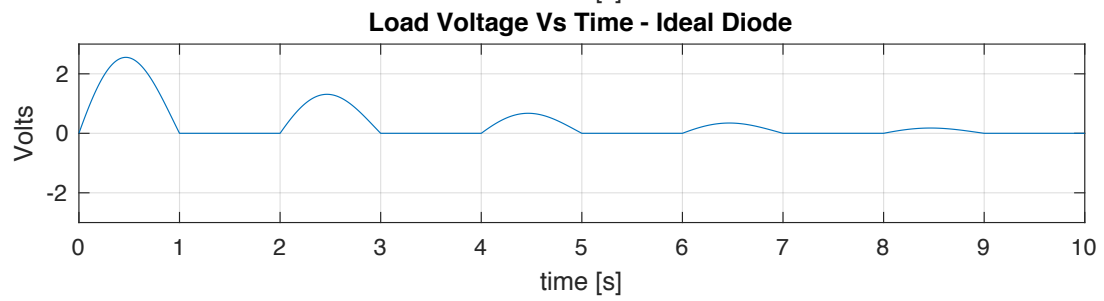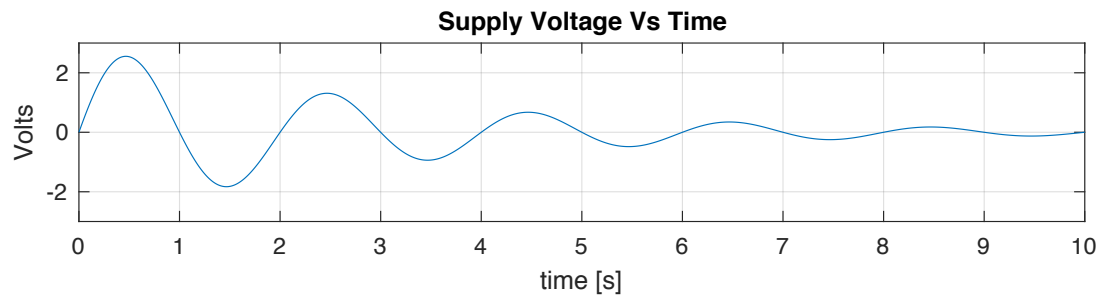
Question 2 (20 Points)

A circular pool is being built at UAH and it is built for the largest possible pool in the square yard. The corner deck is 1.8 ft by 12.5 ft and must fit into the yard as shown below. Determine how big of a square yard is required by submitting a MATLAB program *pool.m* . As a comment, include the dimension of the yard in your program.