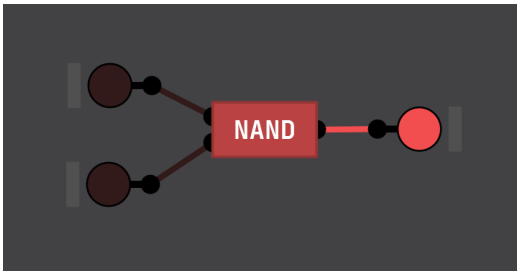
ENR 325 Assignment #1.5

Due: 9/5/25 10:00 pm

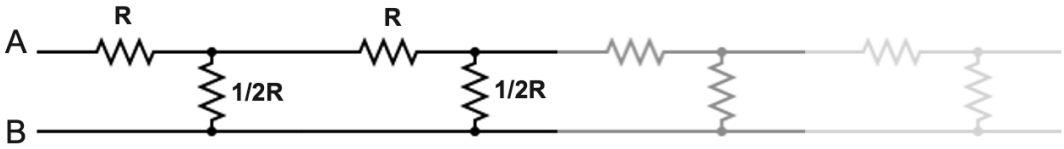
1. Install this game:
   https://sebastian.itch.io/digital-logic-sim

   Build the following I/O of a NAND gate:

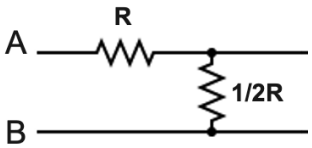
   And use one sentence (or one truth table) to tell what it does. Reporting as one slide.

2. Let's do one more infinite resistor (https://what-if.xkcd.com/113/):

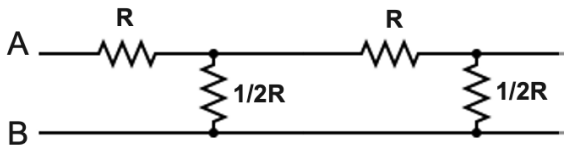
   

   To get: equivalent resistor between point A and B, if the ladder go infinite.

   Do it two ways:
   First modify the quadratic equation and get the answer (Sam, you can skip this).
   Second, do the circuit analysis on level 1 (R1):

level 2 (R2):



Level 3 (R3)… until level N.

Then derive the quadratic equation based on R(N)=R(N-1), when N -> ∞.

3. Let's do one more puzzle from the MIT open course:

Problem 1-3: You are given a black box with three terminals, as shown below. The box is known to contain five 1-ohm resistors.

Using an ohm-meter, you measure the resistance between the terminals to be the following:

A - B: 1.5 ohms
B - C: 3 ohms
A - C: 2.5 ohms

Determine the configuration of the five resistors inside the box.

I use https://www.circuit-diagram.org/ to draw circuit diagram. But you can use anything else!