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# Prelab 3

```
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% Lab Number: 2
% Class: ECEN 50L
% Date: 4/23/24
% Section time: 14:15T
```

# Part 1

```
Vs = 5;
Rs = 10e4;
Rvm = 10e5;
R1 = [15e3;20e3;30e3;56e3;100e3];

% Expected Value of v1
I = Vs./(Rs+R1);
V1 = Is .* R1;

% Expected value of v1L
R1vm = (R1.*Rvm)./(Rvm+R1);
Rt = (R1vm + Rs);
I = Vs./Rt;
V1L = I .* R1;

% Expected value of E1
E1 = (V1L - V1)./V1*100; % This is a provided formula

% Expected value of Rvm for known v1L
RmvL = V1L.*R1.*Rs./(Vs*R1-v1L.*(R1+Rs));
table_A = table (R1,V1,V1L, E1, RmvL)
```

```
table_A =

  5×5 table

     R1        V1         V1L        E1         RmvL
    _____    _______    _______    _______    _________

    15000    0.65217    0.65343    0.19313    1.015e+06
    20000    0.83333    0.83607    0.32787     1.02e+06
    30000     1.1538     1.1617    0.67669     1.03e+06
    56000     1.7949     1.8297     1.9406    1.056e+06
```

```
    1e+05        2.5       2.619      4.7619       1.1e+06
```

# Part 2

```
Vs = 2;
Rs = 100;
Ram = 1e3;
R2 = [51,62,100,270,330];

% Expected value of i2
I2 = Vs./(Rs + R2) * 10e2;

% Expected value of i2L
I2L = Vs./(Rs + R2 + Ram) * 10e2;

% Expected % error
E2 = (I2L - I2)./I2 * 100; % This is really big but seems right

% Expected RamL value
RamL = ((Vs ./I2L) * 10e2 - Rs - R2 );
R2 = R2';
I2 = I2';
I2L = I2L';
E2 = E2';
RamL = RamL';
table_B = table (R2,I2,I2L,E2,RamL)
```

```
table_B =

  5×5 table

    R2       I2       I2L        E2       RamL
    ___    _____    _____    _______    ____

     51    13.245    1.7376    -86.881    1000
     62    12.346    1.7212    -86.059    1000
    100        10    1.6667    -83.333    1000
    270    5.4054    1.4599    -72.993    1000
    330    4.6512    1.3986     -69.93    1000
```

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