```
a =
   364
b =
  -228
c =
   2.0000 + 5.0000i
d =
  -3.0000 - 4.0000i
calc_1 =
  183.4692
S =
 -26.0000 - 7.0000i
Real_S =
   -26
Imag_S =
    -7
Mag_S =
   26.9258
Ang_S_rad =
   -2.8786
Ang_S_deg =
 -164.9315
F =
   0.2145 - 0.1172i

-------------------------- Part 3 ---------------------------

restistors = [133.4000,  162.3000,  158.7000,  148.1000,  154.2000,  141.6000,  147.5000]
R_avg =
  149.4000
R_median =
  148.1000
R_min =
  133.4000
R_max =
  162.3000
R_Sd =
    9.9840
```

$I_0 = 46\text{mA}$
$\tau = 15.9174\text{s}$

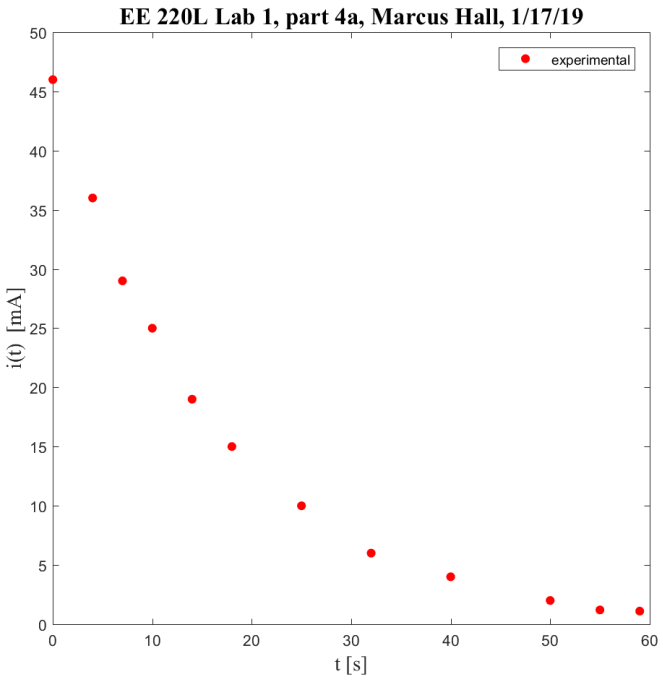

Figure 1: Part 4a

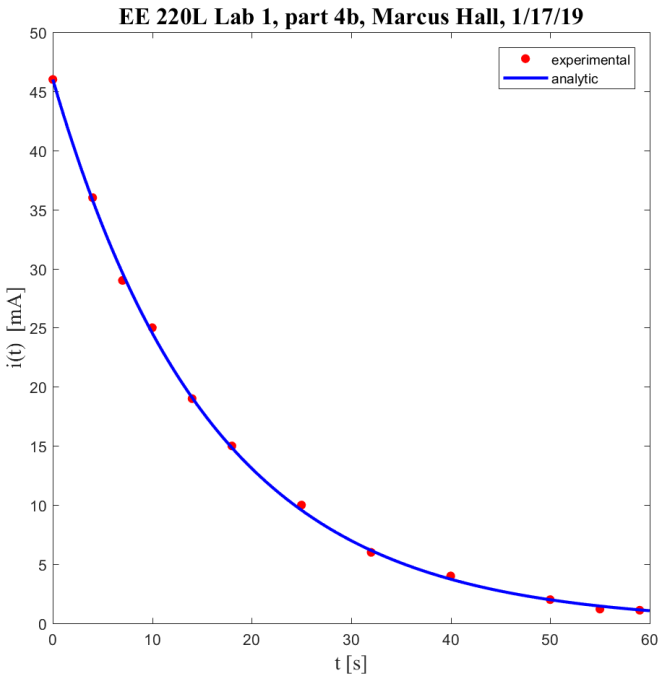

Figure 2: Part 4a

Listing 1: MATLAB code for Lab 1 Circuits 1

```
% Lab_1_Part_4
% EE 220L Lab 1 Part 4
% Marcus Hall
% Jan. 17, 2019


time_exp = [0,4,7,10,14,18,25,32,40,50,55,59]; %[sec]
data_exp = [46,36,29,25,19,15,10,6,4,2,1.2,1.1]; %[mA]
if(length(time_exp) ~= length(data_exp))
    error('Unequal Time & data array')
end

plot(time_exp,data_exp,'r.','MarkerSize', 20)
axis([0 60 0 50]), % define ranges for horizontal & vertical axes
ylabel('i(t)  [mA]','fontsize',14,'fontname','times'), % vert. axis label
xlabel('t [s]','fontsize',14,'fontname','times'), % horiz. axis label
title('EE 220L Lab 1, part 4a, Marcus Hall, 1/17/19','fontsize',16,'fontname','times')
legend('experimental')
saveas(gcf,'lab_1_4a.png')




I_not = 46;
tau = time_exp./log(I_not./data_exp)
tau = tau(2:length(tau));
Tau = mean(tau)
time = 0:0.5:60;
i_t = I_not * exp(-time./Tau);

plot(time_exp,data_exp,'r.',time,i_t,'b-','linewidth',2,'MarkerSize', 20)
axis([0 60 0 50]), % define ranges for horizontal & vertical axes
ylabel('i(t)  [mA]','fontsize',14,'fontname','times'), % vert. axis label
xlabel('t [s]','fontsize',14,'fontname','times'), % horiz. axis label
title('EE 220L Lab 1, part 4b, Marcus Hall, 1/17/19','fontsize',16,'fontname','times')
legend('experimental','analytic')
saveas(gcf,'lab_1_4b.png')
```