```matlab
%Tyler Matthews
%P2.3

clc; %clear console
close all; %close figures

%Initial Conditions
m = 262;
cd = 0.2;
af = 2;
c0 = 0.009;
c1 = 1.75*10^-6;
p = 1.16;
g = 9.81;
grade = 15;

dy = grade/100;
Beta = atand(grade/100);
Fgxt = m*g*sin(Beta);

%ai
Ftr = Fgxt

%aii
Ftrmin = Fgxt-m*g*c0

%bi
v = 0:10:180; %Timestep

%Calculate
Beta = atand(-12/100);
Fgxt = m*g*sin(Beta);
Fad = (p/2)*cd*af*(v.^2);
Froll = m*g*(c0+c1*(v.^2));

%Plot
figure;
plot(v, Fgxt, 'd', v, Fad, v, Froll);
title('F_g_x_t, F_a_d, F_r_o_l_l Vs. V');
xlabel('Velocity');
ylabel('Force');

%bii
%Calculate
Ftr = Fgxt+Fad+Froll

%Plot
figure;
plot(v,Ftr);
xlabel('Velocity');
ylabel('Force');
title('F_t_r vs V');
```

Ftr =

```
      2.0037e+03


Ftrmin =

      1.9806e+03


Ftr =

      1.0e+03 *

  Columns 1 through 7

    -1.3412    -1.3176    -1.2466    -1.1284    -0.9628    -0.7500    -0.4898

  Columns 8 through 14

    -0.1824     0.1724     0.5744     1.0237     1.5204     2.0643     2.6556

  Columns 15 through 19

     3.2941     3.9800     4.7131     5.4936     6.3213
```
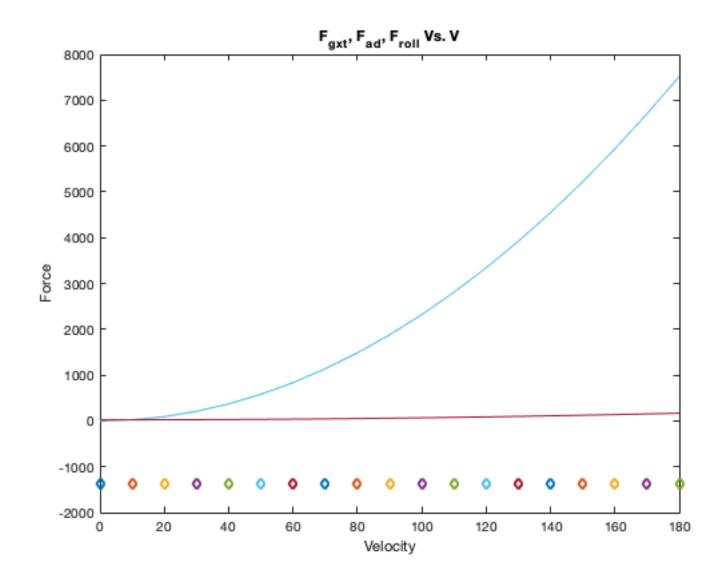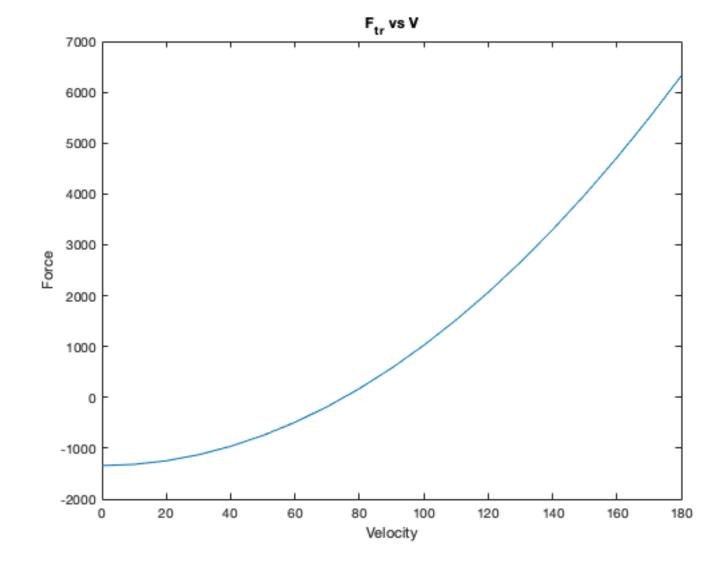

F_{gxt}, F_{ad}, F_{roll} Vs. V

Fₜᵣ vs V