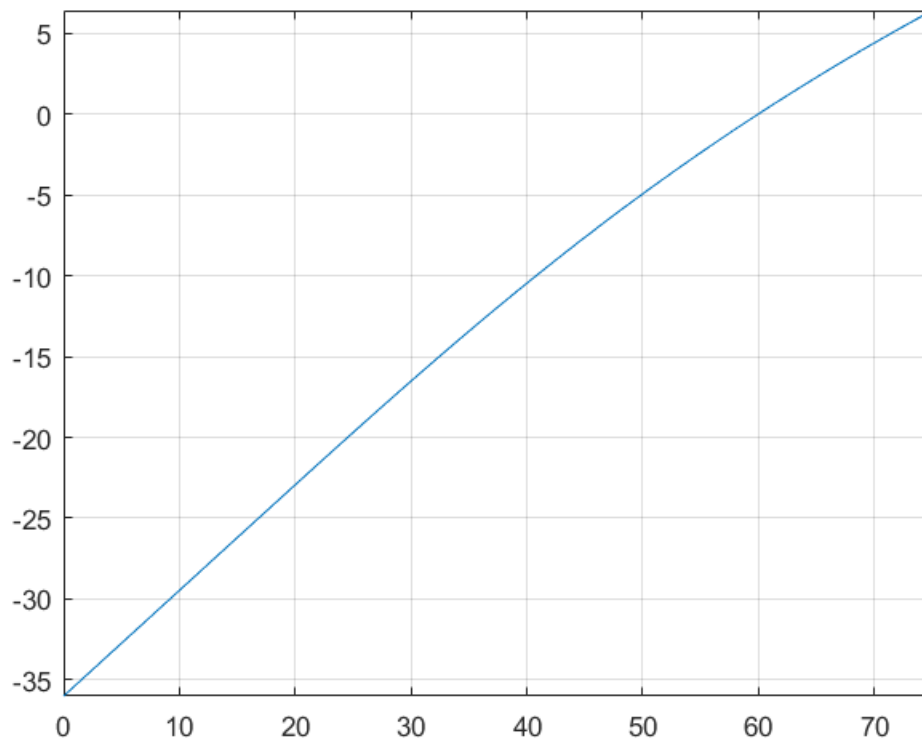

HW2_3: Velocity of a falling parachutist

```
clear; clc; close all
%givens
g=9.81;      %gravitational constant, g, m/s^2
v=36;        %velocity m/s
t=10;        %time, seconds
c=15;        %drag coefficient, 15 kg/s

%plot the function
f=@(m)g*m/c.*(1-exp(-c./m*t))-v;
fplot(f,[0 75])
grid on
```



```
%false position algorithm
xl=55;xu=65; %root looks very close to 60 kg
es=0.5*10^(2-4); %4 sig fig
ea=100; %to enter the loop
fxl=f(xl);  fxu=f(xu);
xr=xu - (fxu*(xl-xu))/(fxl-fxu); %first guess
fxr=f(xr);
while ea > es
    %another iteration needed, which side contains the root?
    if sign(fxl)==sign(fxr) %they are the same sign, so then no root
        between them
```

```
        xl = xr;
        fxl=fxr;
    else
        %otherwise...
        xu = xr;
        fxu=fxr;
    end
    %proceed with next guess
    oldxr=xr; %save previous
    xr=xu - (fxu*(xl-xu))/(fxl-fxu); %next guess
    fxr=f(xr);
    ea = abs((xr-oldxr)/xr)*100;    %error
end
mass = xr; %the answer
fprintf('The mass for the parachutist is %.2f kg\n',mass)
```

The mass for the parachutist is 59.96 kg

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