Question #2

-- In this question the function **maxVel_for_power.mlx** will be called in order to solve the corresponding maximum velocity for the power.

Preparation

```
% Adding path to enable the use of function in another directory
doc = genpath('C:\Users\small\Desktop\classes\2019-spring\AAE251\hw9\matlab\functions');
addpath(doc);

wing_span = 14.85; % [m]
wing_area = 11.5; % [m^2]
mass = 1020; % [kg]
horsePower = 85; % English units
e_Oswald = 0.7;
zeroLiftDrag_coeff = 0.03;
prop_eff = 0.9;
density = 1.225; % [kg/m^3]

% converting horsepower to Watts
power = 63384.5; % [W]

% Drag polar coefficient K becomes
AR = wing_span^2 / wing_area;
dragPolar_coeff = 1 / pi / AR / e_Oswald;

% The maximum power becomes
P_max = 0.9 * power; % [W]

% the weight of the aircraft becomes
weight = mass * 9.81;
```

Main

```
% Calling out the function to get the maximum velocity
V_max = maxVel_for_power(P_max, weight, density, wing_area, ...
    zeroLiftDrag_coeff, dragPolar_coeff);
```

Result

```
fprintf(['The maximum velocity of this ',...
    'Predator UAV at sea level is %.2f m/s'], V_max);
```

The maximum velocity of this Predator UAV at sea level is 62.53 m/s