

```
1 % Lambert Solver for HW3 Problem_1 - Earth-Apophis
  Intercept
2
3 clear all;
4 close all; clc;
5
6 a = fzero(@lambert, 1.1)
7
8 function f = lambert(a)
9
10 s = 1.8381;          % Pre-calculated space-triangle
    semi-perimeter
11 c = 1.6007;          % Pre-calculated chord length
12 tf = (410/365.25) * 2 * pi;    % ToF of 410 days
13
14 % Updated value for alpha because our t_f is greater
    than t_m
15 alpha = 2*pi - 2*asin(sqrt(s/(2*a)));
16 beta = - 2*asin(sqrt((s-c)/(2*a)));
17
18 f = tf-(a^(3/2))*(alpha-beta-sin(alpha)+sin(beta));
19
20 end
21
```