Ay190 – Worksheet 3
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1 Root Finding: Eccentricity Anomality

1.1 Low Ecentricity

First in the not too eccentric orbit we find that using the secant method, where the derivaitve is estimated using a secant, that it only takes 4 steps to get to a relative error of less than 10^{-10}. We also find that

t	x	y	counter
91	-16898.4	1495695.9	4
182	-1495915.5	15897.6	4
273	-49209.3	-1494981.9	4

1.2 High Ecentricity

When we increase the ecentricity of the orbit we find that it does take slightly longer to converge but it does not take dramatically longer.

t	x	y	counter
91	-1004146.3	49.5	7
182	-1495978.1	0.36	7
273	-1018362.04	-49.0	7

We could accelerate convergance by TKTK