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MECH 105 Homework 8 problem 2 9/25/2017 This script solves a funtion for theta using the false pre-diction method and the bisection method.

```
clc
clear
close all
format longe
% function
syms f(t)
% Known variables
F=150; % Force in newtons
g=9.81; % gravity in meters per second^2
m=25; % mass in kilograms
u=0.55; % coefitent of friction
f(t)=(u*m*g)/(cos(t)+(u*sin(t)))-F;
fplot(f,'r')
xlim([1.1 1.2])
ylim([-1 1])
refline(0,0)
% Bracketing methods
[root fx ea iter]=falsePosition(f,1.14,1.18);
disp('False Position Method:')
fprintf('The estimated root is %f\n',root)
fprintf('The function evaluated at the root is %f\n',fx)
fprintf('The approximate error is %f\n',ea)
fprintf('The number of iterations is %f\n',iter)
[rootb fxb eab iterb]=bisect(f,1.14,1.18,0.0001);
disp('Bisection Method:')
fprintf('The estimated root is %f\n',rootb)
fprintf('The function evaluated at the root is %f\n',fxb)
fprintf('The approximate error is %f\n',eab)
fprintf('The number of iterations is %f\n',iterb)
```

```
False Position Method:
The estimated root is 1.166188
The function evaluated at the root is -0.000000
The approximate error is 0.000017
The number of iterations is 4.000000
Bisection Method:
The estimated root is 1.166188
The function evaluated at the root is 0.000058
The approximate error is 0.000052
The number of iterations is 16.000000
```
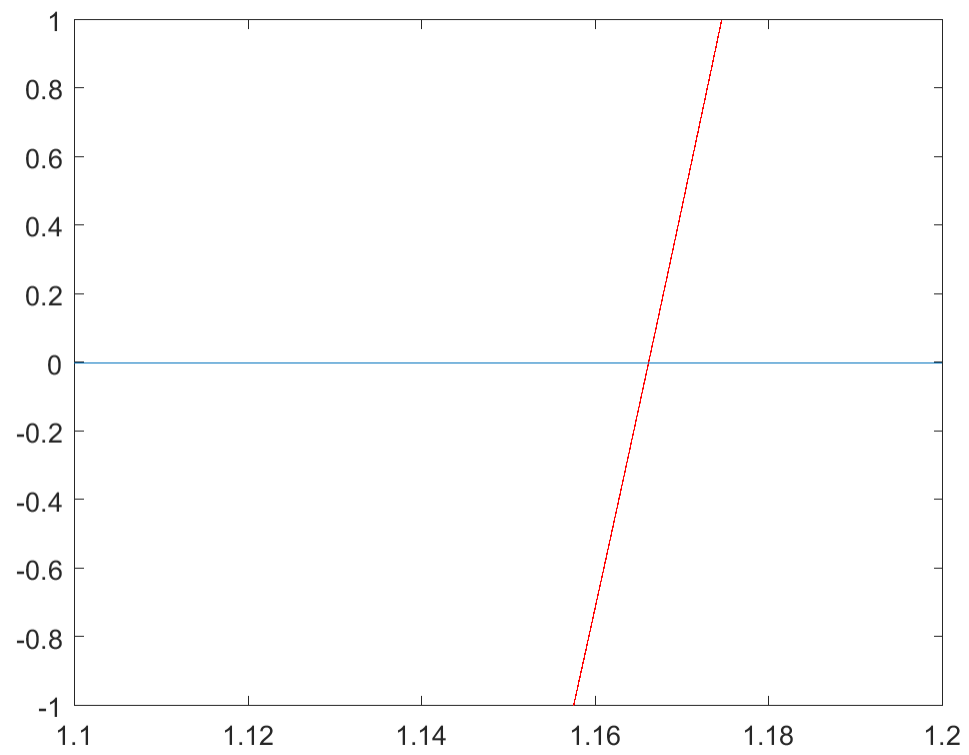
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