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Example of Debugging and Scope

This script is intended to show you how functions and scripts fit together and how to use the MATLAB debugger. The script finds the analytical solution to sin(x) in degrees, identifies it on a plot of sin(x), then calculates estimates of sin(x) using the taylor series approx with varying number of terms.

Created on: 17 Jan 2018 By: DrB

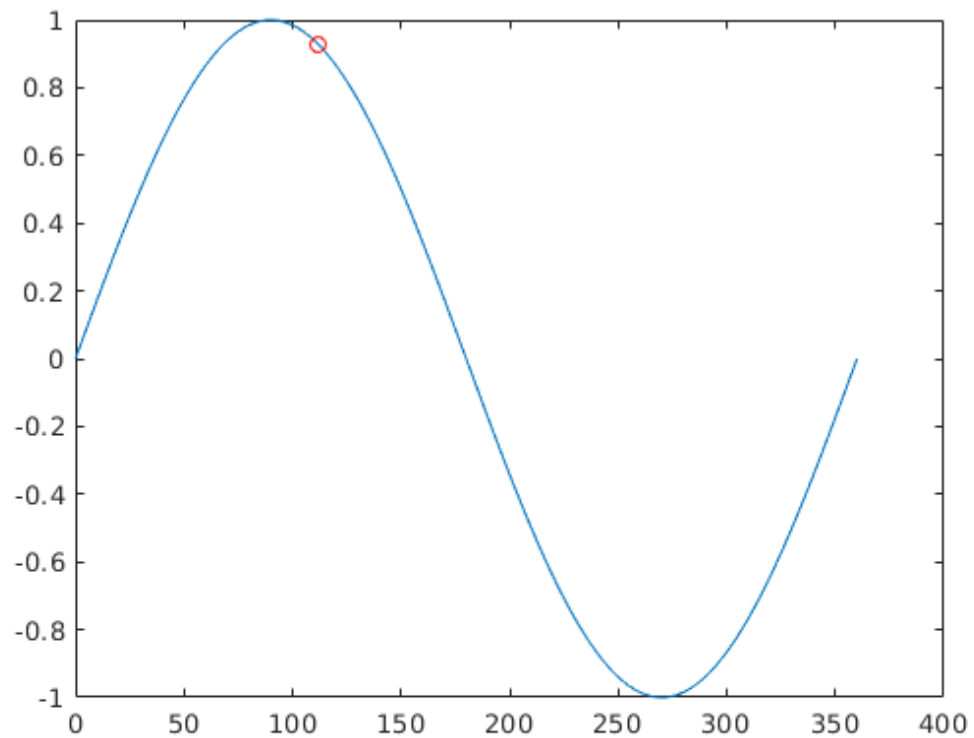
```
-----  
clear  
clc  
close all
```

Consider the analytical value of sin(x) for angle

```
angle = 112; % in degrees  
analyticalAnswer = sind(angle);
```

Lets identify that on a graph of sin

```
x = 0:1:360;  
y = sind(x);  
plot(x,y);  
hold on;  
plot(angle,analyticalAnswer,'ro');
```

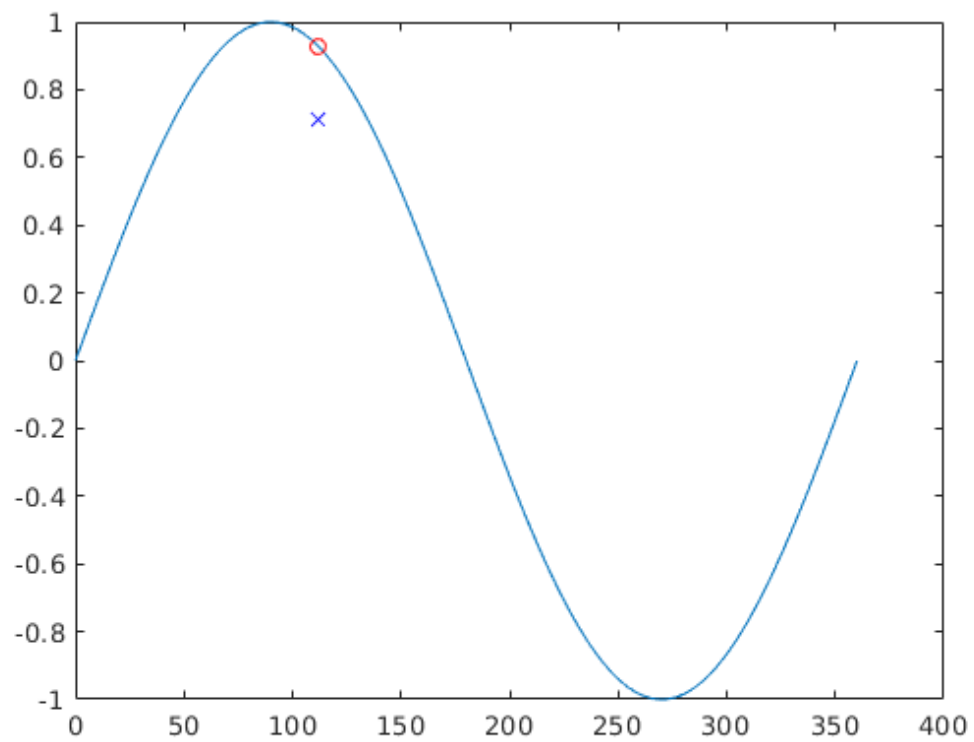


Now lets use the function `taylorSine` to estimate with 2 terms

Use function `taylorSine`

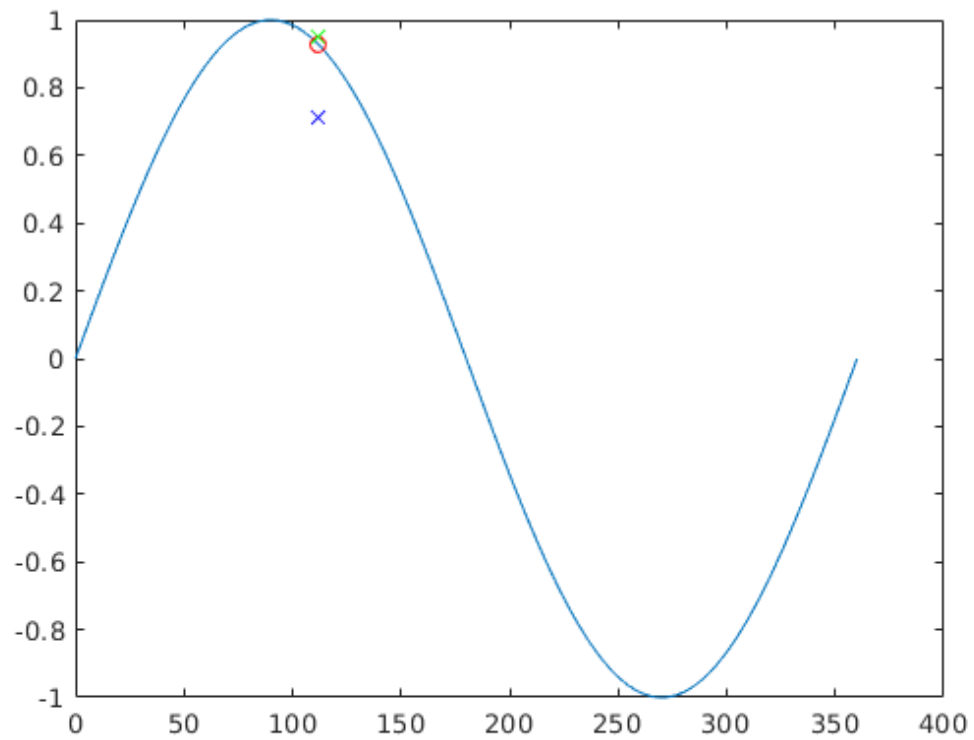
```
taylor2 = taylorSine(angle,2);
```

```
% Then plot to see where estimate is  
plot(angle,taylor2,'bx');
```



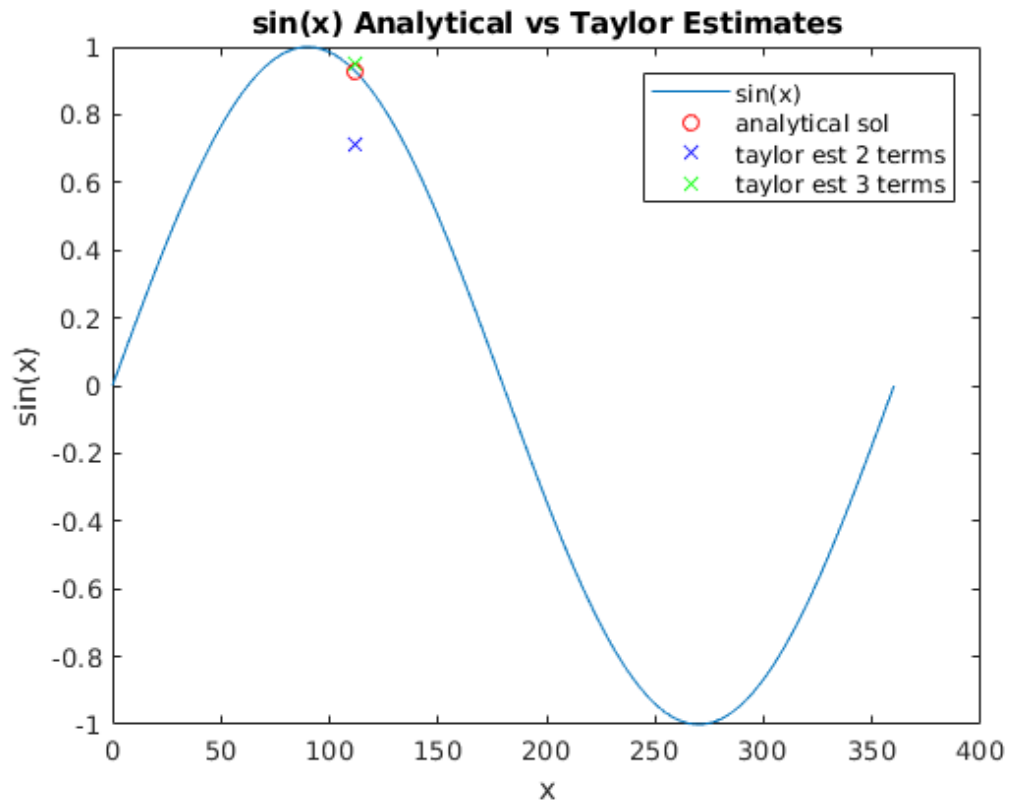
Use `taylorSine` to estimate 3 terms

```
taylor3 = taylorSine(angle,3);  
plot(angle,taylor3,'gx');
```



Create a legend and axis labels

```
title('sin(x) Analytical vs Taylor Estimates')
legend('sin(x)', 'analytical sol', 'taylor est 2 terms', 'taylor est 3
terms')
xlabel('x')
ylabel('sin(x)')
```



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