

33. GRAPHING

Topics:

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Objectives:

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













33.1 Introduction

- coordinates
- types - line, bar, scatter, x-y, chart
- curves vs. data
- SCILAB examples

- With Scilab,

```
t = [ 1 2 3 4 5 ];  
f = [ 1 4 9 16 25 ];  
plot2d(t, f);  
// pause here and look at the graph  
xbasc(); // clears the screen  
plot2d(t, f, style=-1, leg='test graph')  
xtitle('time (min)');
```

- Scilab graph styles,

-1		-8	
-2		-9	
-3		-10	
-4		-11	
-5		-12	
-6		-13	
-7		-14	

33.2 Graphing Functions

- In Scilab,

```
deff('[y]=f(t)', [y=%e^(-5*t)']);  
f(2)  
t = (0:0.1:10);  
fplot2d(t, f);
```

```
// OR
```

```
t = (0:0.1:10);  
y=%e^(-5*t);  
plot2d(t, f);
```

33.3 LOG Plots

- In Scilab,

```
f = [1, 10, 100, 1000, 10000];  
G = [10, 10, 20, 100, 1000];  
plot2d(log10(f), log10(G), style=-1);  
// OR  
plot2d(f, G, style=-1, logflag='11');
```

33.4 Multiple Plots

- In Scilab,

```
t = [0: 0.1: 6];  
y = sin(t) + sin(3 * t);  
z = sin(t) + cos(t);  
xset('window', 0); plot(t, y);  
xset('window', 1); plot(t, z);
```

33.5 Other Items of Interest

- In Scilab,

```
xbasimg(0, 'filename.eps');
```

33.6 Problems

1. Plot the following function using 20 datapoints in Scilab from -10 to 10.

$$y(t) = e^{-5t} \sin(3t)$$

2. Draw a scatter plot in Scilab for the following (x, y) data.

(1,1) (2, 3) (2, 5) (1, 7) (5, 8)

33.7 Challenge Problem

1. Draw a histogram (bar chart) for the following raw data.

1, 4, 7, 3, 5, 2, 4, 3, 7, 9, 7, 3, 4, 1, 7, 5, 2, 4, 3, 6, 9, 5, 1, 5, 2, 3, 8