
A Quick MATLAB Graphing Tutorial

Steve Balady, 2018

Problem 4.2.

Once again, publish this and upload it as Week 4 Problem 2.

Here's a quick MATLAB graphing tutorial. This isn't exhaustive, but it's enough for you to get your hands dirty.

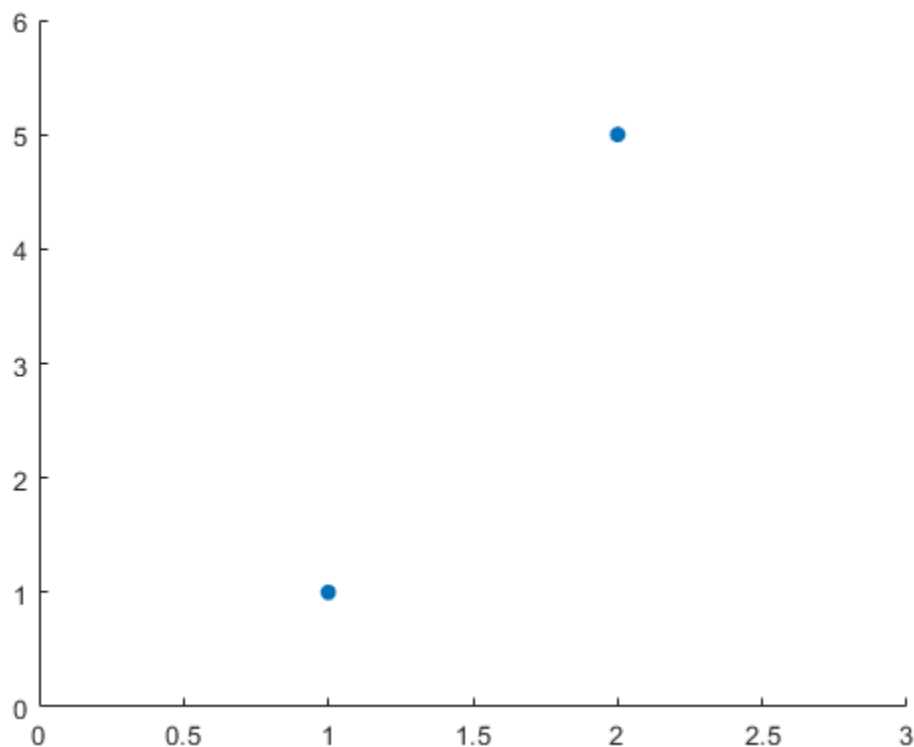
```
P = [1 1; 2 5]
```

```
P =
```

```
    1    1  
    2    5
```

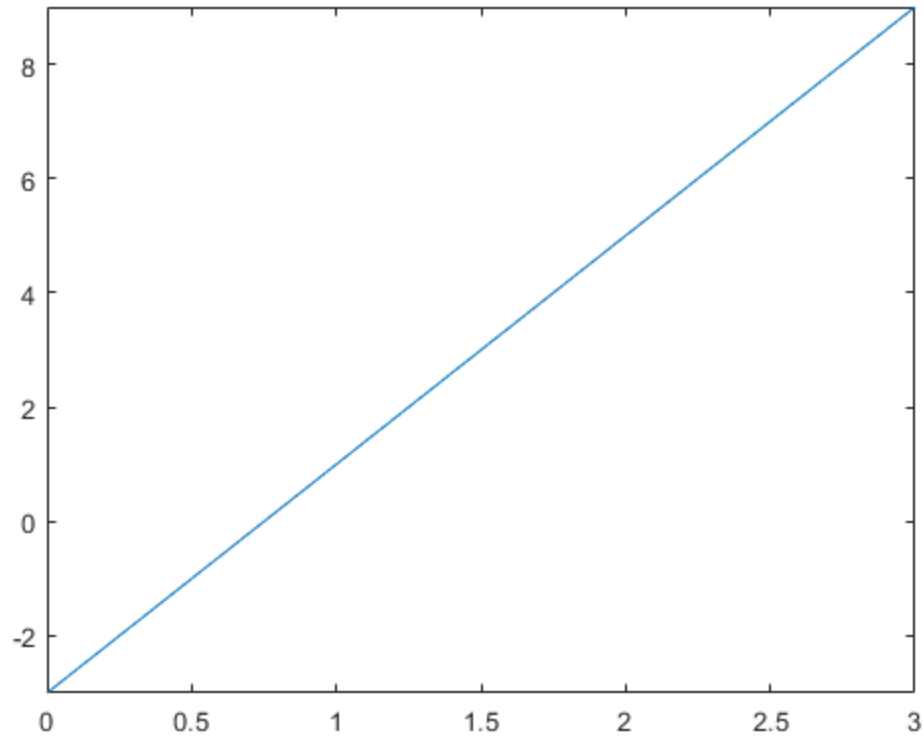
Here's the points (1,1) and (2,5); we can graph them with scatter().

```
scatter(P(:,1),P(:,2),'filled') % plot the first column against the  
    second  
xlim([0 3]); ylim([0 6]); % MATLAB often chooses awkward axes
```



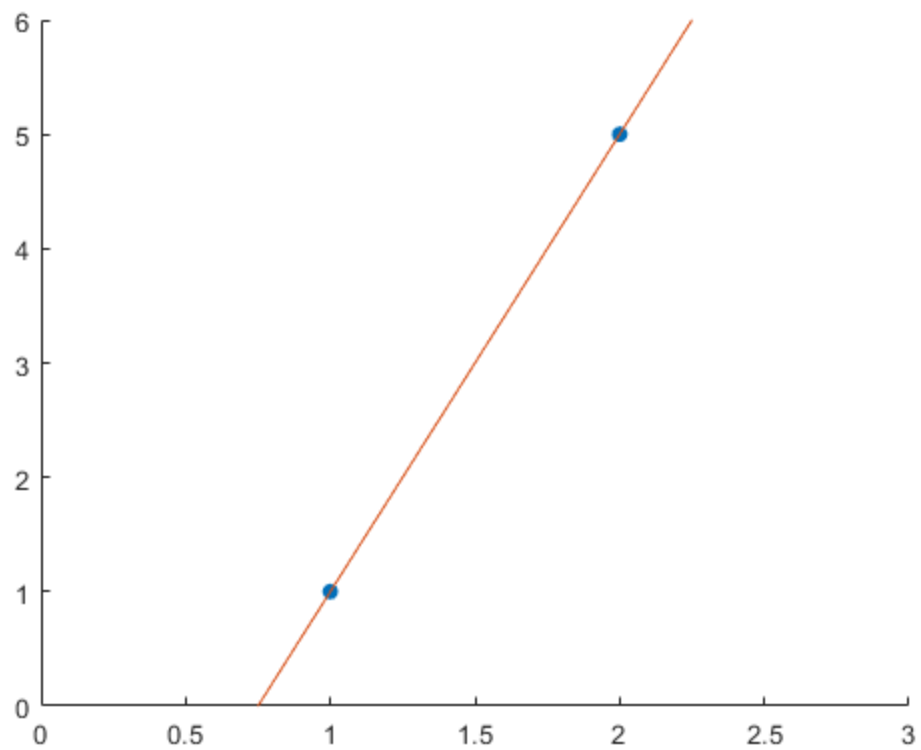
Now let's fit a line to these two points.

```
syms x;  
f = 4*x-3;  
fplot(f,[0 3]) % !?!
```



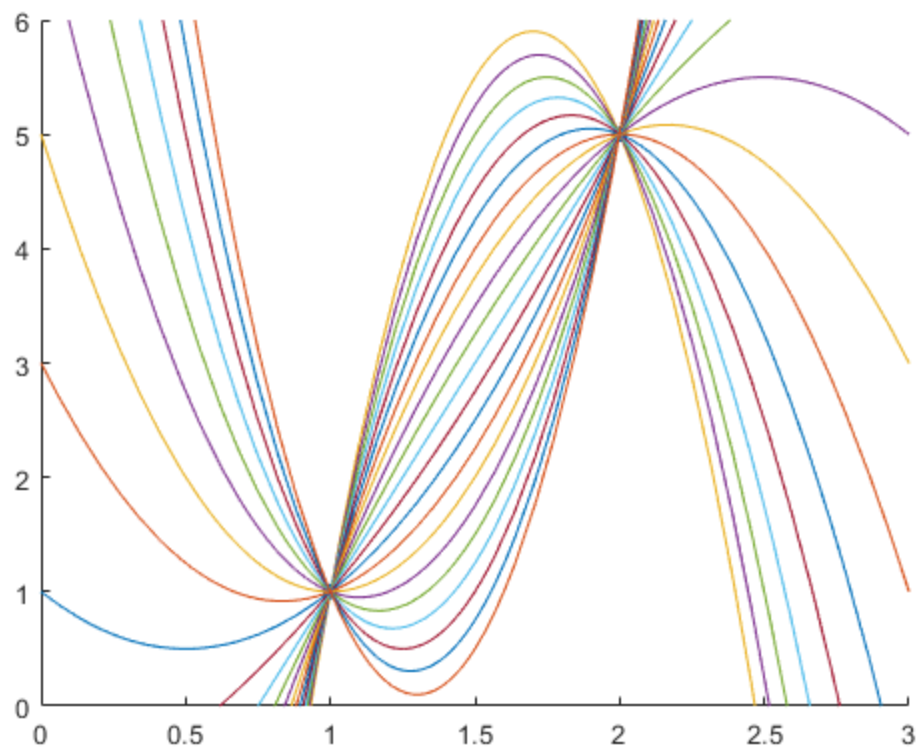
What happened? `scatter()` and `fplot()` both create figures. Unless you explicitly tell MATLAB to draw them on the same set of axes, it'll start fresh every time.

```
scatter(P(:,1),P(:,2),'filled');  
hold on; % this means "keep drawing on the same axes"  
xlim([0 3]); ylim([0 6]);  
fplot(f,[0 3])
```



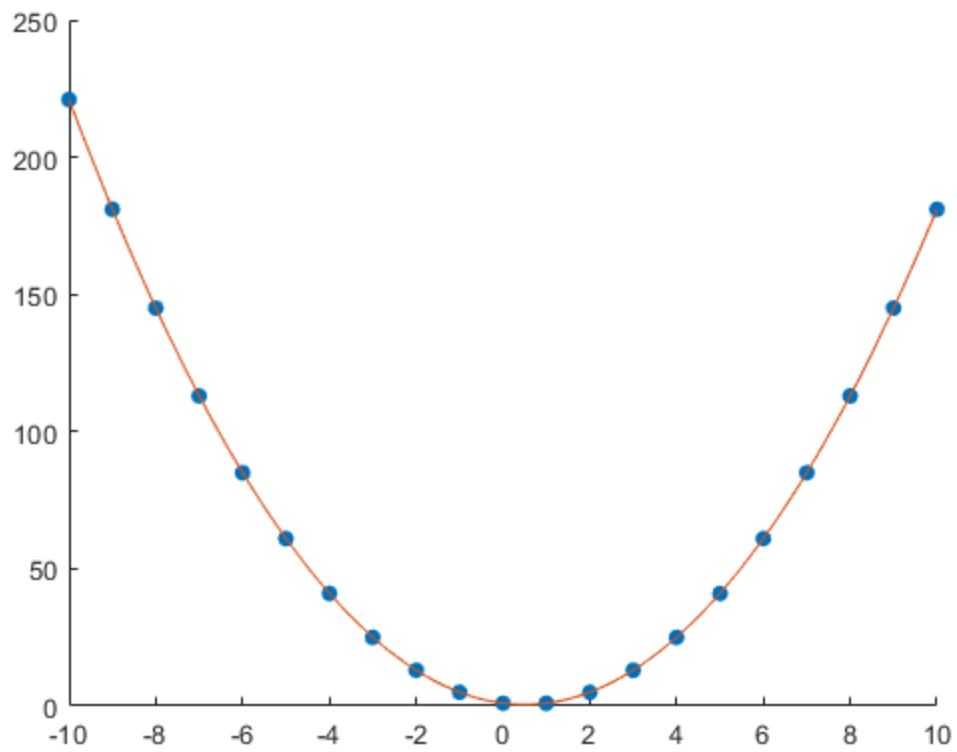
We can also get fancy.

```
g = (x-1)*(x-2);  
A = [-10:10]';  
fplot(f+A*g,[0 3])  
hold off; % "I'm done with this picture now, thanks"
```



A is a (column) vector of the 21 integers in $[-10,10]$. We can also treat A as the x-coordinates of a function by using the `subs()` command:

```
h = f+2*g;  
hA = subs(h,x,A); % the vector of y-coordinates  
scatter(A,hA,'filled'); % this plots the points (A, h(A))  
hold on;  
fplot(h,[-10 10]) % and this plots the graph of h
```



This should be enough for now. If you'd like to make your graphs prettier (and see lots of cool examples), check out the documentation for `scatter` and `fplot`.

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