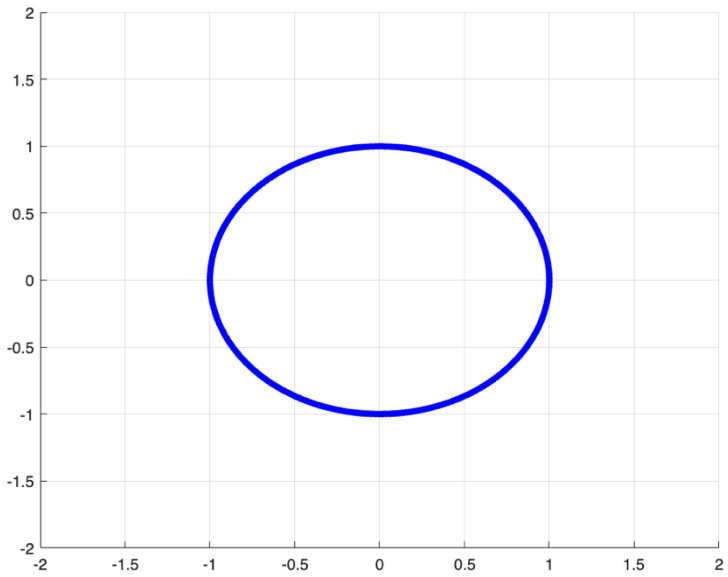
Examples for Class 3

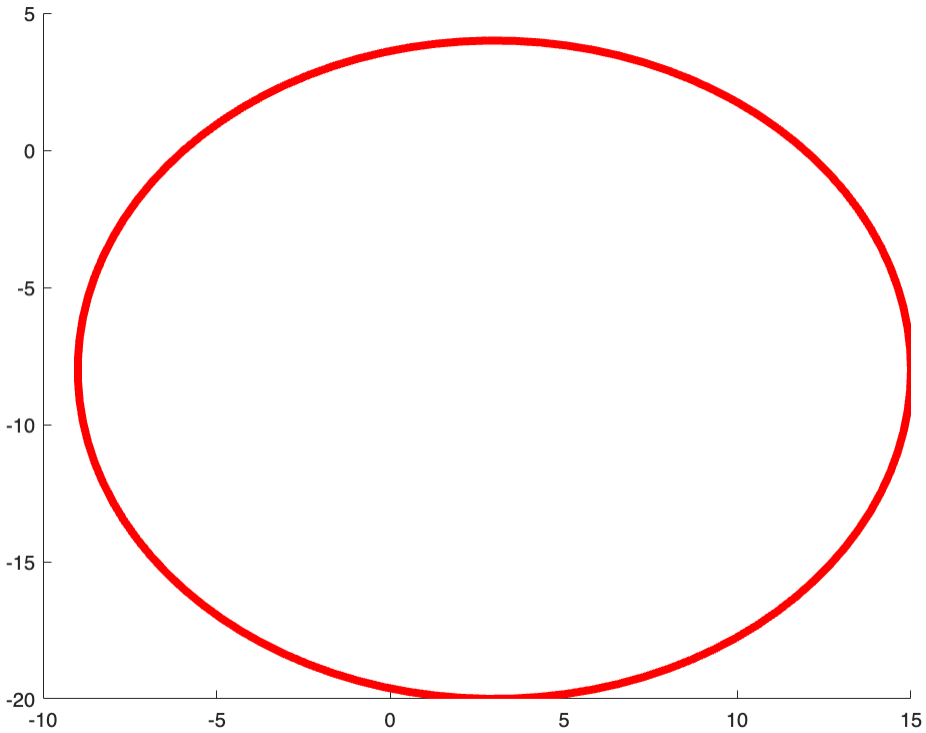
Example 1: Animate Unit Circle

```
hold on

t =linspace(0, 2*pi, 100);
grid on
y = sin(t);
x = cos(t);
% To simply get graph, use : plot( cos(t), sin(t), 'Color', 'black',
'LineWidth', 4);

curve = animatedline('Color','blue', 'LineWidth',4);
set(gca, 'Xlim',[-2 2],'YLim' ,[-2 2]);
for i = 1: length(t)
    addpoints(curve, x(i), y(i));
    drawnow
    pause(0.01)
end

hold off
```



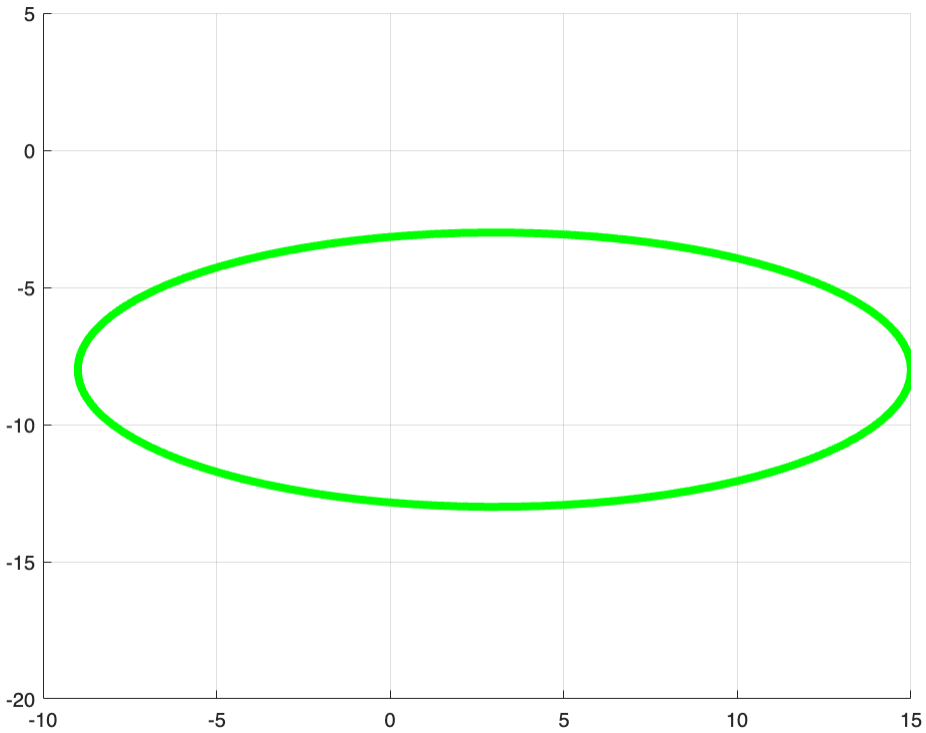
Example 2: Animate Circle of radius 12 and center at (3,-8)

```
clf % clears screen of previous plots
hold on
t =linspace(0, 2*pi, 100);
x = cos(t);
y = sin(t);

curve2 = animatedline('Color','red', 'LineWidth',4);
 set(gca, 'Xlim',[-10 15],'YLim' ,[-20 5]);
for i = 1: length(t)
    addpoints(curve2, 3 + 12*x(i), -8 + 12*y(i));
    drawnow
    pause(0.01)
end
```



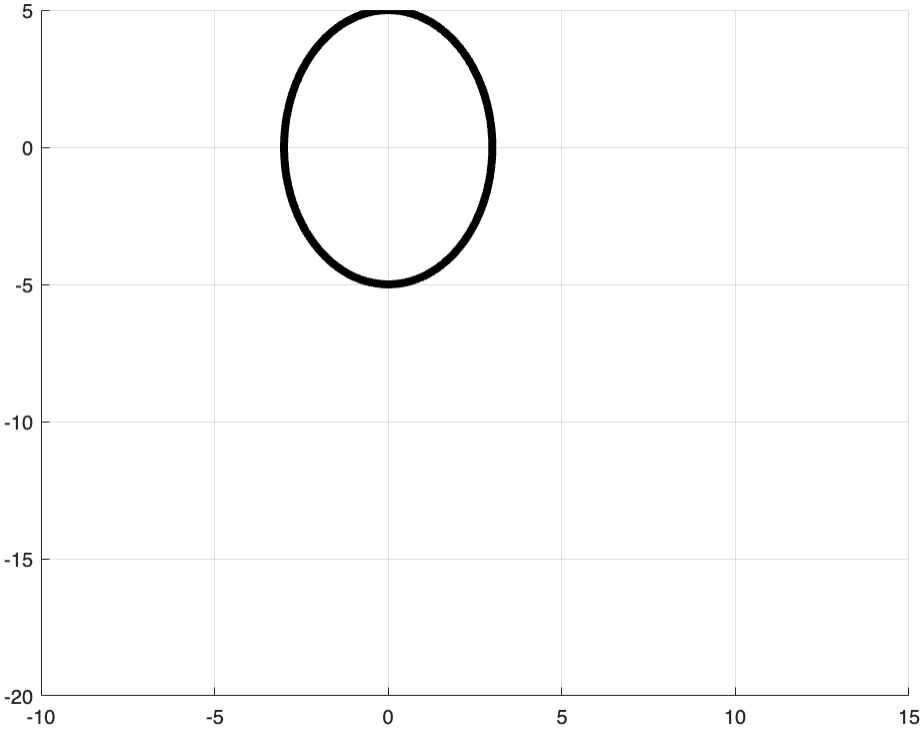
Example 3: Animate an Ellipse

```
clf
hold on
grid on
t =linspace(0, 2*pi, 100);
x = cos(t);
y = sin(t);

curve2 = animatedline('Color','green', 'LineWidth',4);
 set(gca, 'Xlim',[-10 15],'YLim' ,[-20 5]);
for i = 1: length(t)
    addpoints(curve2, 3 + 12*x(i), -8 + 5*y(i));
    drawnow
    pause(0.1)
end
hold off
```



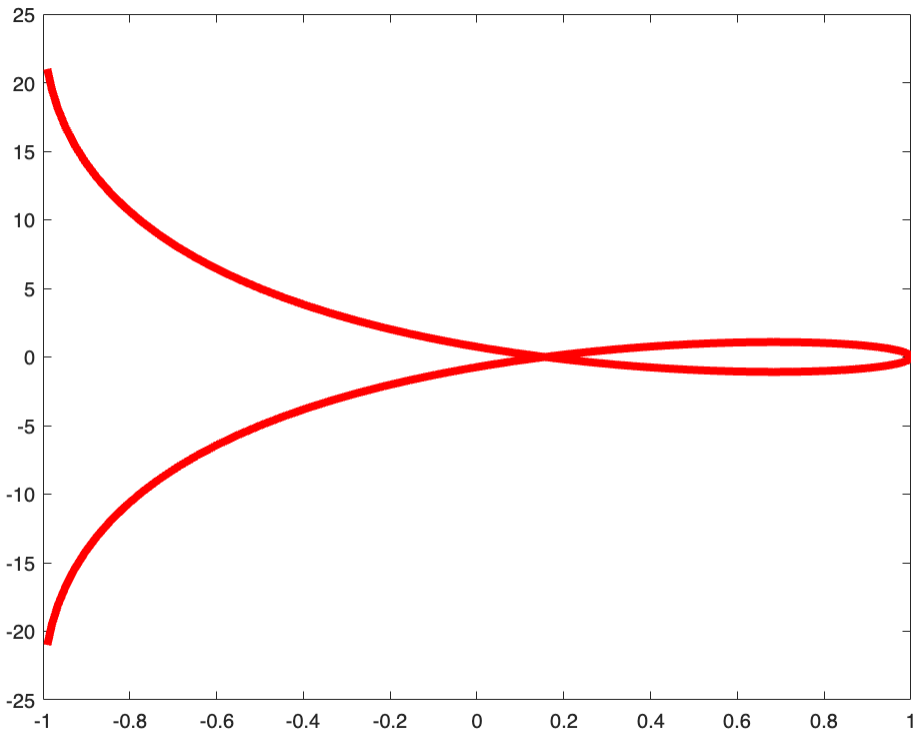
Example 4: Animate Another Ellipse Centered At Oirign

```
clf
hold on
grid on
t =linspace(0, 2*pi, 100);
x = cos(t);
y = sin(t);

curve2 = animatedline('Color','black', 'LineWidth',4);
 set(gca, 'Xlim',[-10 15],'YLim' ,[-20 5]);
for i = 1: length(t)
    addpoints(curve2, 3*x(i),  5*y(i));
    drawnow
    pause(0.1)
end
hold off
```



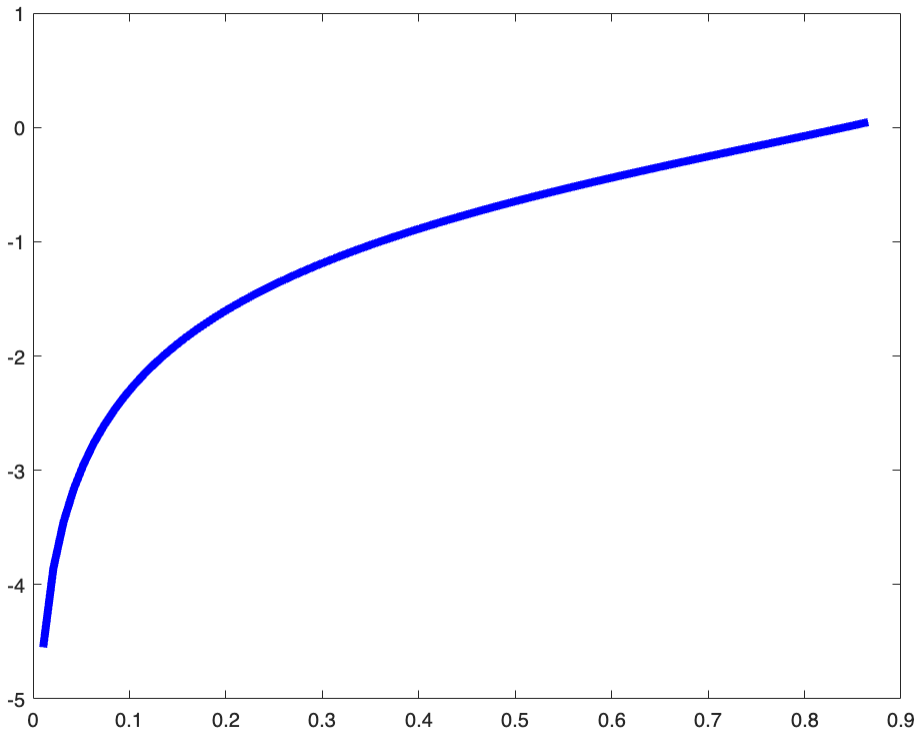
Example 4: plot $(\cos t, t^3 - 2t)$ on [-3,3]

```
t = linspace(-3, 3, 100);
plot( cos(t), t.^3 -2 * t, 'Color', 'r', 'LineWidth', 4)
```



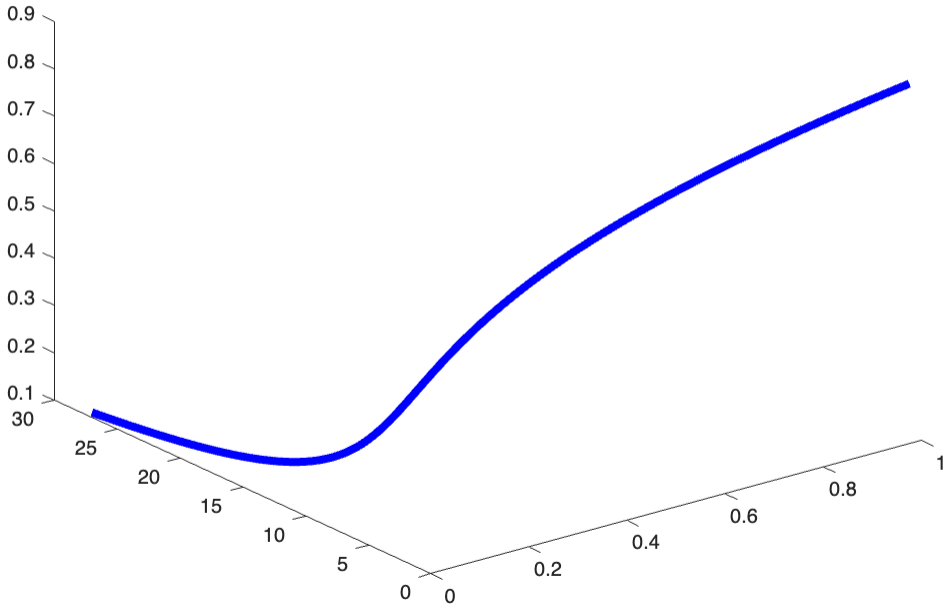
Example 5 : Plot $(\sin t, \ln t)$ on $\left[0, \frac{\pi}{3}\right]$

```
t = linspace(0, pi/3, 100);
plot( sin(t), log(t), 'Color', 'b', 'LineWidth', 4)
```



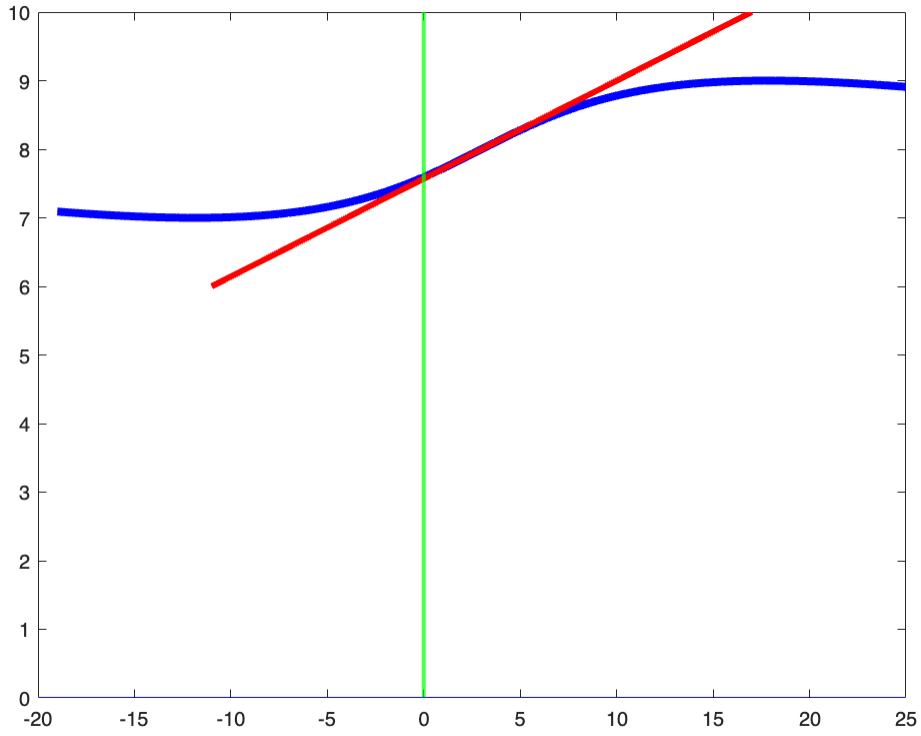
Example 6: 3-D plot of $(t^7, t^{-3}, \sin t^2)$ **on** $\left[\frac{1}{3}, 1\right]$

```
t = linspace(1/3, 1, 100);
plot3( t.^7, t.^(-3),sin(t.^2) ,'Color', 'b', 'LineWidth', 4)
```



Example: Plot of Curve and a Tangent Line

```
x = linspace(-2, 2, 100);
plot( x.^3 + 7*x + 3, 8 + sin(x), 'Color', 'b', 'LineWidth', 4)
hold on
plot(3 + 7*x, 8 + x, 'Color', 'red', 'LineWidth', 3)
hold on
xline(0, 'Color', 'g','LineWidth',2)
hold on
yline(0, 'Color', 'b')
hold on
hold off
```



```
t = linspace(0, 7*pi, 100);
plot3( cos(t), t, sin(t), 'LineWidth', 4)
```