

**Assignment:** Write, in complete sentences, a solution to Section 3.6, Exercise 26:

Use implicit differentiation to find an equation of the line tangent to the curve  $x^2 + 2xy - y^2 + x = 2$  at the point  $(1, 2)$ .

Your paper will be graded for presentation as well as mathematical correctness.

Remember the conventions of mathematical writing from the previous assignment: organize your work, keep everything in sentences, write in the first-person plural, and don't begin a sentence with a symbol.

If you like (and this really is optional), you might include a computer-generated graph with your solution, showing the curve and the tangent line. Our lab computers all run a program called Maple that's not too difficult to use. Here are the Maple commands to generate a graph of the ellipse  $x^2 + 2y^2 = 6$  and the line  $x + y = 3$ , which happens to be tangent to the ellipse.

```
> with(plots):  
> implicitplot({x^2+2*y^2=6,x+y=3},x=-4..4,y=-4..4);
```

The  $x=-4..4$ ,  $y=-4..4$  tells Maple to plot the curve and line in the region  $-4 \leq x \leq 4$  and  $-4 \leq y \leq 4$ , which seems about right for this picture. When you plot the curve and line in the problem above, you'll want to choose your own plotting bounds. Also, note that Maple does not recognize implied multiplication. For what we think of as  $2x$ , you can't just type " $2x$ "; instead, you need to type " $2*x$ ".