

**Second MAPLE Assignment, due Oct. 15**  
**Math 113, Fall 2009**

The command for differentiation is

```
>diff(f(x),x);
```

You can simplify an expression with the

```
>simplify();
```

command.

To plot parametric curves, use

```
>plot([f(t),g(t),t=a..b]);
```

where you can replace  $f(t)$  and  $g(t)$  by any functions you want. For an equation with two variables, you first type

```
>with(plots);
```

and then you type, for example,

```
>implicitplot(x^2+y^2=1,x=-1..1,y=-1..1);
```

if you want to graph the unit circle.

1. Differentiate the function

$$f(x) = \sqrt{\frac{x^4 - x + 1}{x^4 + x + 1}}$$

and simplify the result. Where does the graph of  $f$  have horizontal tangents? Graph  $f$  and  $f'$  on the same graph. Is  $f(x)$  decreasing where  $f'(x)$  is negative? (This problem is from Calculus: Early Transcendentals, 4th edition, by David Stewart, Brooks Cole publishers.)

2. Page 203 of the text. Let  $x$  be the number formed by the last two digits of your G number. If  $x$  is between 00 and 24, do problem 127. If it is between 25 and 49, do problem 128; if it is between 50 and 74, do problem 129; if it is between 75 and 99, do problem 130.
3. Use the `implicitplot` command to graph the equation  $x^3 + y^3 - cxy = 0$ , where  $c$  is the last digit of your G number.