A Brief Introduction to basic Maple commands

In this worksheet, we'll introduce some of the basic commands that make math 23 a little easier to bear. First, let's review the very basics - defining functions and evaluation. Maple use := to make a definition. For example

```
> f:=x^2+sin(x);
```
$$f := x^2 + \sin(x)$$
```
>
```
This command assigns the label "f" to the expression x^2+sin(x).   Since this is differential equations, we need to differentiate. The next command reads "Differentiate the expression f with respect to the variable x":
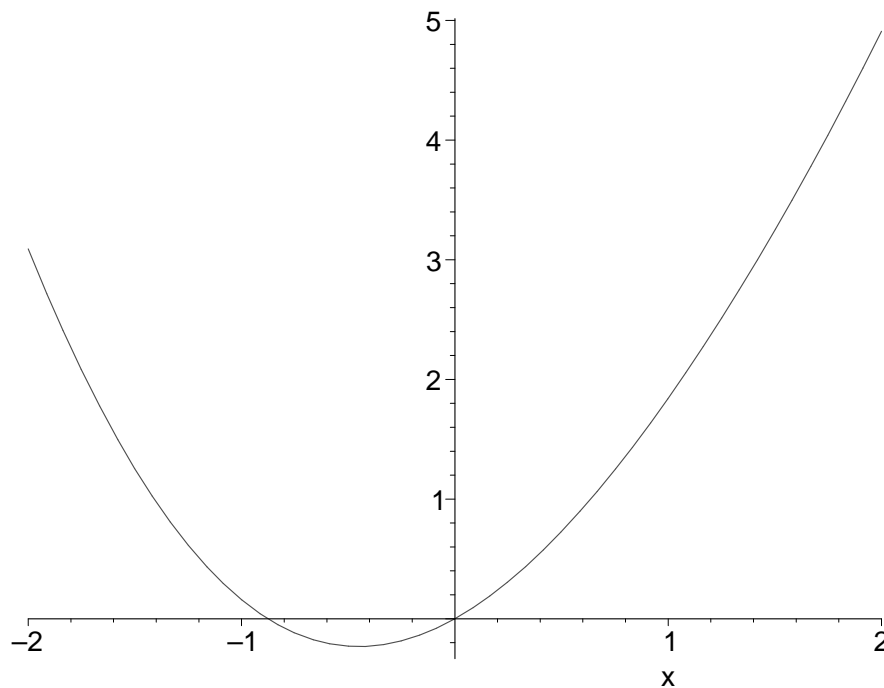
```
> diff(f,x);
```
$$2\,x + \cos(x)$$

Note, you don't need to define f to use this:
```
> diff(x^2+exp(x)+ln(1-x),x);
```
$$2\,x + e^x - \frac{1}{1-x}$$

Next, we plot the function on the interval -2 to 2 using the command plot.

```
> plot(f,x=-2..2);
```


And now, integrate with respect to x (the indefinite integral):

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

$$\frac{1}{3}x^3 - \cos(x)$$

Note that there is no integration constant here so be careful. If you want a definite integral, simply provide bounds:

```
> int(f,x=1..3);
```

$$\frac{26}{3} - \cos(3) + \cos(1)$$

This is the value of the integral of f from x=1 to x=3. If you want a decimal approximation of the number, use the evalf command. The % sign is maple's way of saying "use the last this I evaluated here".

```
> evalf(%);
```

$$10.19696147$$