Week 8 - Integration

Review:

> f[variable_]:= variable^2
> Dots delay evalution until input specified
> Green text on RHS indicates what is replaced before the RHS is evaluated.

Form of function:

Integrate[function,variable]

Calculating a definite integral:

$\int_0^3 1\, dx$ or equivalently $\int_0^3 dx$

```
Integrate[1, {x, 0, 3}]
```

```
3
```

Comparing forms of built-in *Mathematica* functions:

Plot[function, {variable, min, max}]
Integrate[function, {variable, min, max}]

Defining functions:

```
f[a_, b_] := Integrate[x^2, {x, a, b}]
```

Corresponds to f(a,b)=$\int_a^b x^2\, dx$

```
f[-3, 3]
```

```
f[-3, 3]
```

```
f[0, 5]
```

```
f[0, 5]
```

Summary:

> We can integrate using Integrate[function, {variable, min value, max value}].
> The form of 'integrate' is similar to that of plot. More importantly, we should try and spot patterns between functions to help us understand how new code works.
> Reminder: All built-in functions begin with a capital letter and use square brackets e.g. Sin[x]