

# Week 6 - Differentiation

## Review

- > `Plot[function, range, AxesLabel -> {x-axis, y-axis}]`
- > We can use “ “ so that *Mathematica* interprets what we have written as text as opposed to code.
- > Most importantly, if in doubt, speak out! Asking questions is a good habit to get into and can save you a lot of time and help you understand the material better.

## Differentiation

How do we differentiate a function using *Mathematica*?

```
Dt[function, variable]
```

```
Dt[x^3, x]
```

```
3 x^2
```

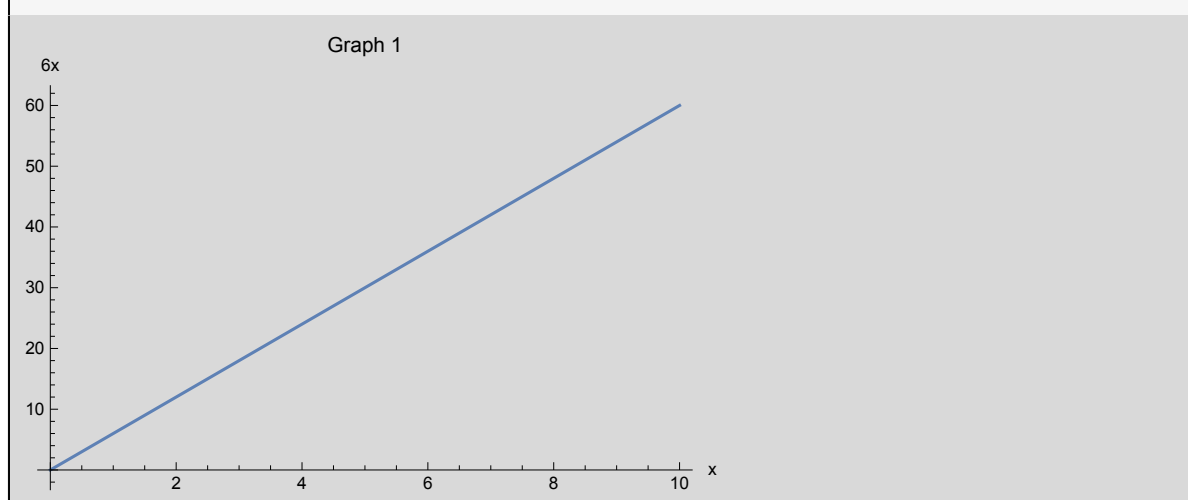
```
Dt[x^3, {x, 1}]
```

```
3 x^2
```

```
Dt[x^3, {x, 2}]
```

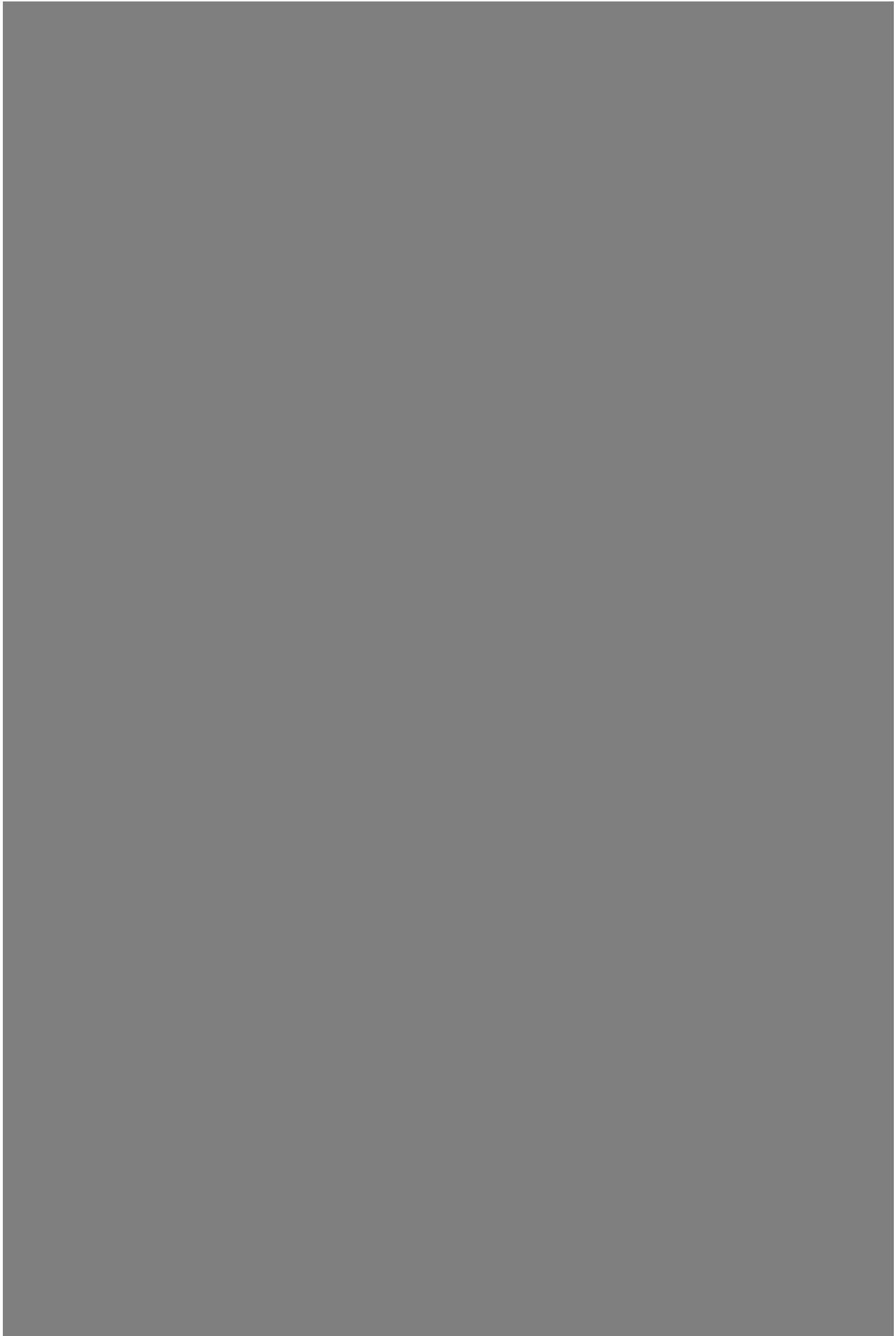
```
6 x
```

```
Plot[6 x, {x, 0, 10}, AxesLabel -> {"x", "6x"}, PlotLabel -> "Graph 1"]
```




 differentiate sin2x



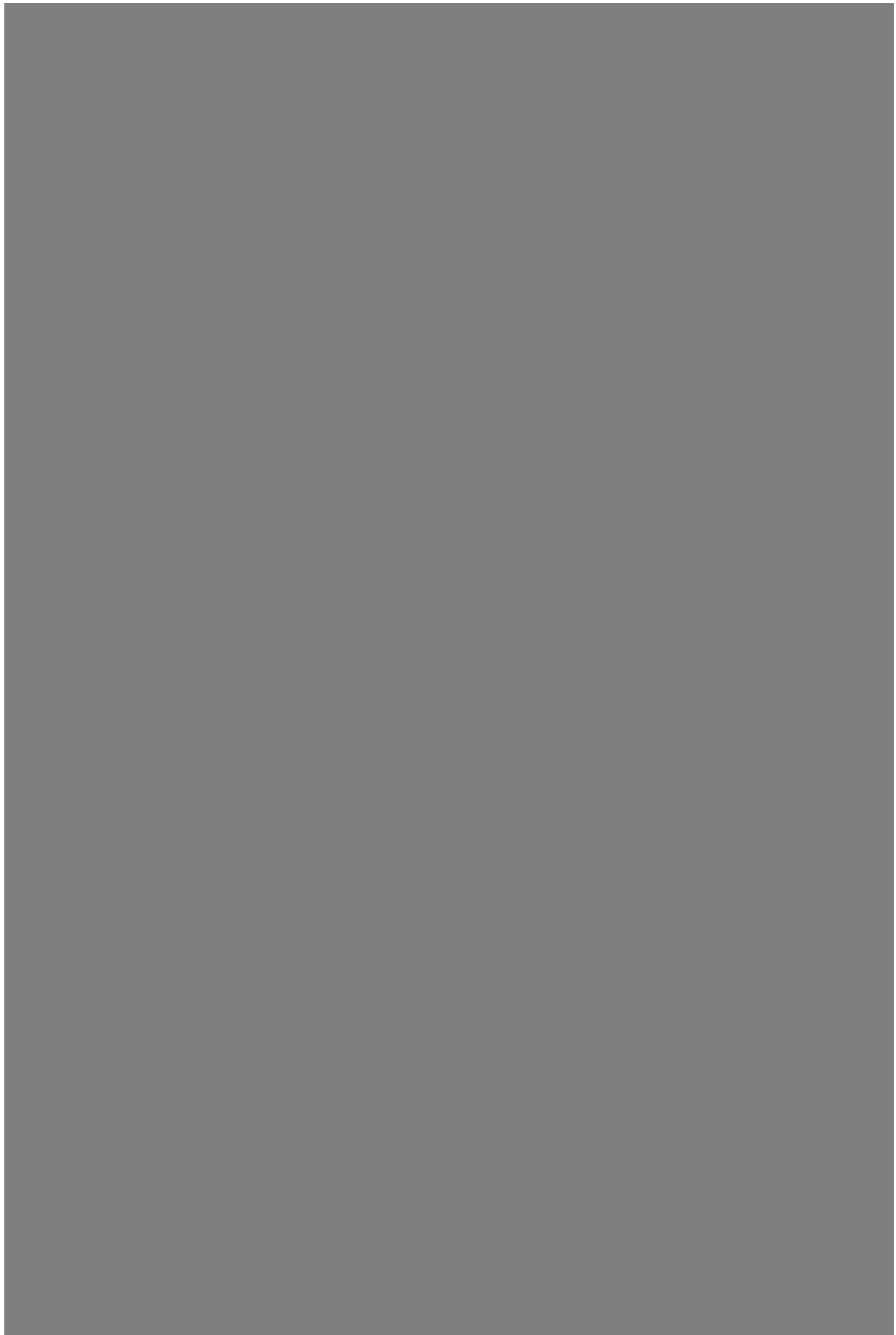


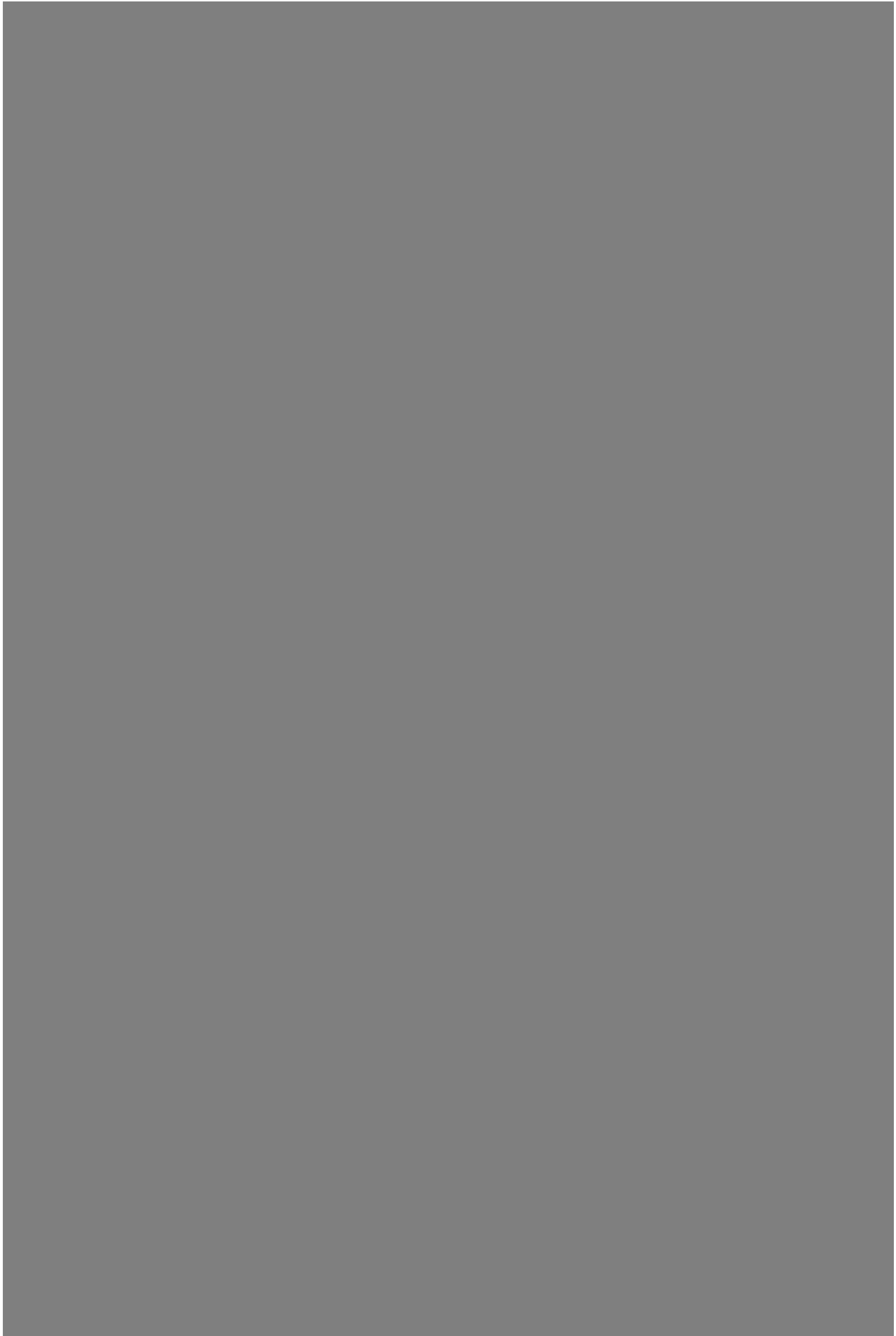




 **weather in scotland**









## Summary

- > Can differentiate using `Dt[function, variable]`
- > If we want to differentiate something multiple times change to `Dt[function, {variable, no. of times}]`
- > Use double equals `' = '` to search for just about anything