

## 0.1 Separable first-order Ordinary Differential Equations

For some we can write:

$$\frac{dy}{dt} = f(t, y)$$

$$\frac{dy}{dt} = \frac{g(t)}{h(y)}$$

We can then do the following:

$$h(y) \frac{dy}{dt} = g(t)$$

$$\int h(y) \frac{dy}{dt} dt = \int g(t) dt + C$$

$$\int h(y) dy = \int g(t) dt + C$$

In some cases, these functions can then be integrated and solved.