Unit 1: Derivatives

What is a derivative?

Rate of Change

```
220 - 50
```

170

```
170 / 2
```

85

Average vs. Instantaneous

$$\frac{\text{Delta } f}{\text{Delta } t}$$

$$\frac{1}{1/60}$$

60

Instantaneous approximation continued

$$\frac{220\,000 - 210\,000}{32 - 30}$$

5000

Derivative at a point

The Derivative of f(x) at x = a

$$f'(a) = \text{Lim}_{b \to a} \frac{f(b) - f(a)}{b - a}$$

A negative derivative?

```
f[t_] := 100 + 20 t - 5 t^2
f'[2]
```

0

Geometric interpretation of the derivative