Consider 3 variables: $x, y = f(x), z = f'(x) = F(x) = \frac{dy}{dx}$ (like time, position, velocity $v = \frac{ds}{dt}$).

- **Limiting ratio of changes** (rate of change) (derivative) $\sim$ quotient of derivatives:
  \[ \lim_{\Delta x \to 0} \frac{\Delta y}{\Delta x} = \frac{dy}{dx} \]

- **Integration** (inverse operations)
  \[ \int dy = \int f'(x) \, dx = \int F(x) \, dx \]
  
- **Graph derivative function**: $\Delta A = F(x) \, dx$
  
- **Area under graph**: $A = \int f(x) \, dx$

The integral of $F$ with respect to $x$ is:

- 

**Notation**:
  - $\int_0^b F(x) \, dx$
  - $\int_0^a F(x) \, dx$

Fish make goes in easy (difficult) but comes out hard (in easy).

Inverse operations offer much harder procedures.