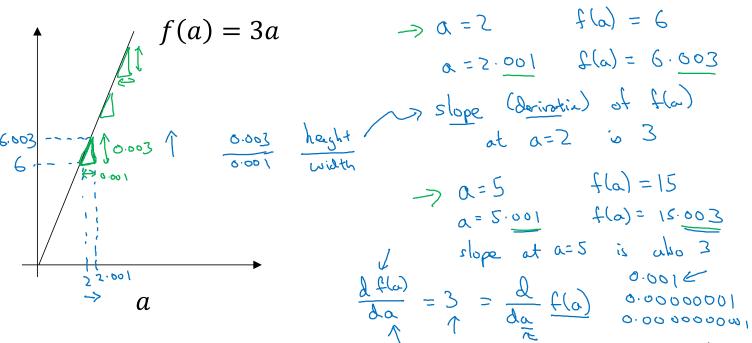# Basics of Neural Network Programming

## Derivatives

deeplearning.ai

# Intuition about derivatives

$$f(a) = 3a$$



→ $a = 2$     $f(a) = 6$

$a = 2.001$     $f(a) = 6.003$

$\dfrac{0.003}{0.001}$    $\dfrac{\text{height}}{\text{width}}$ → slope (derivative) of $f(a)$

       at $a = 2$ is 3

→ $a = 5$     $f(a) = 15$

$a = 5.001$     $f(a) = 15.003$

slope at $a = 5$ is also 3

$$\frac{d f(a)}{da} = 3 = \frac{d}{da} f(a)$$

0.001 ←
0.00000001
0.00 00000001