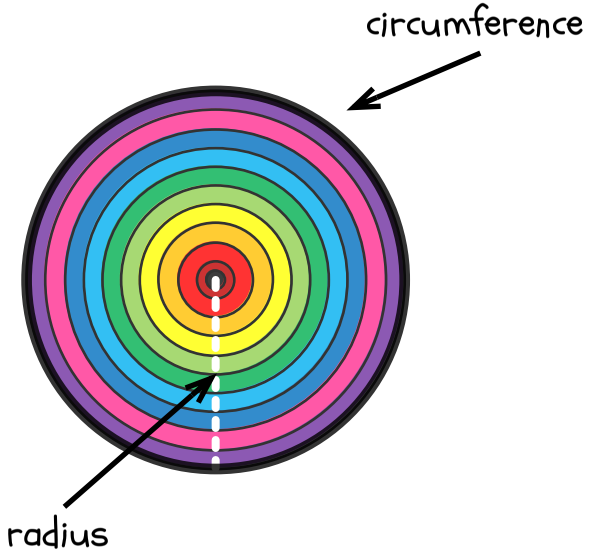
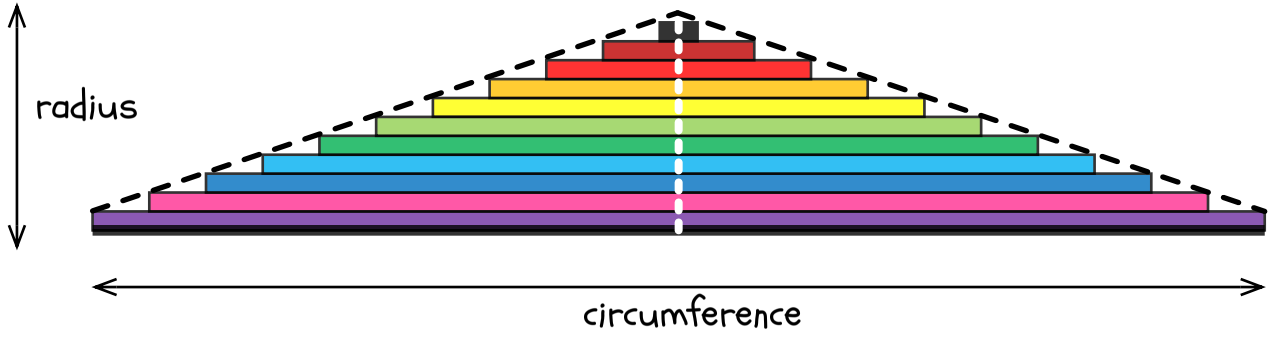
Area of a Circle



circumference = π × diameter

circumference = π × 2 × radius

circumference = 2π × radius



Area = ½ × base × height

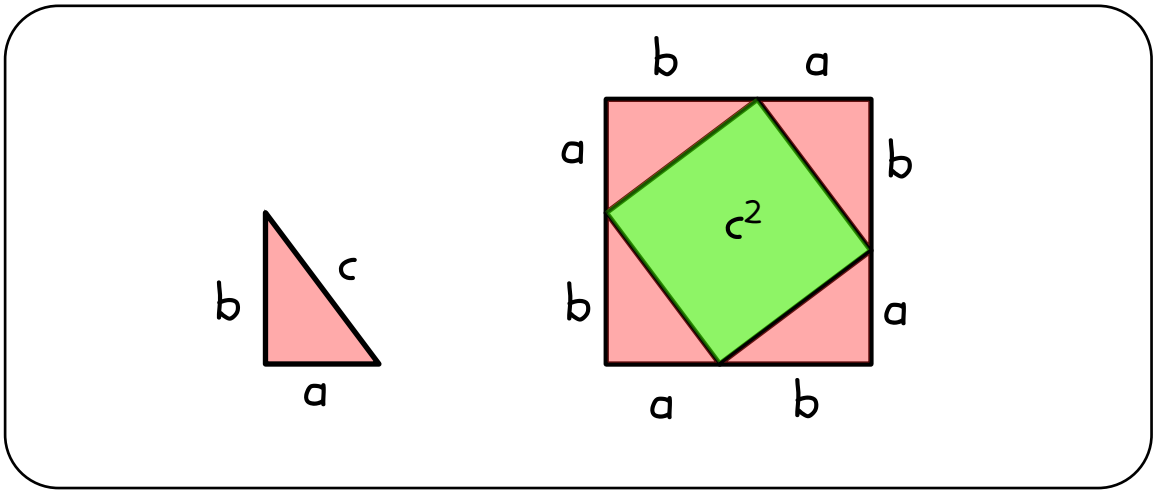
Area = ½ × circumference × radius

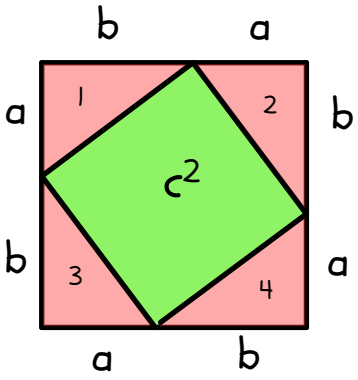
Area = ½ × 2π × radius × radius

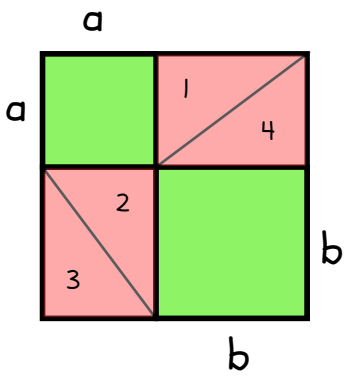
Area = π × radius × radius

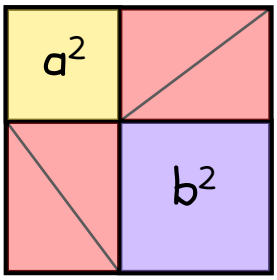
Area = π × radius^2

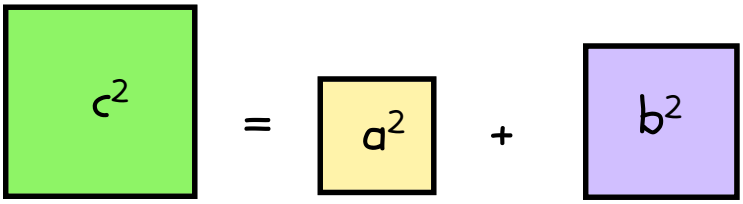
Pythagoras' Theorem

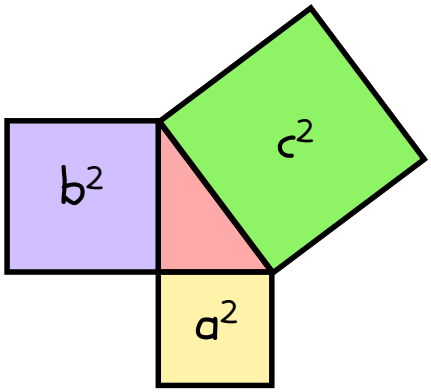






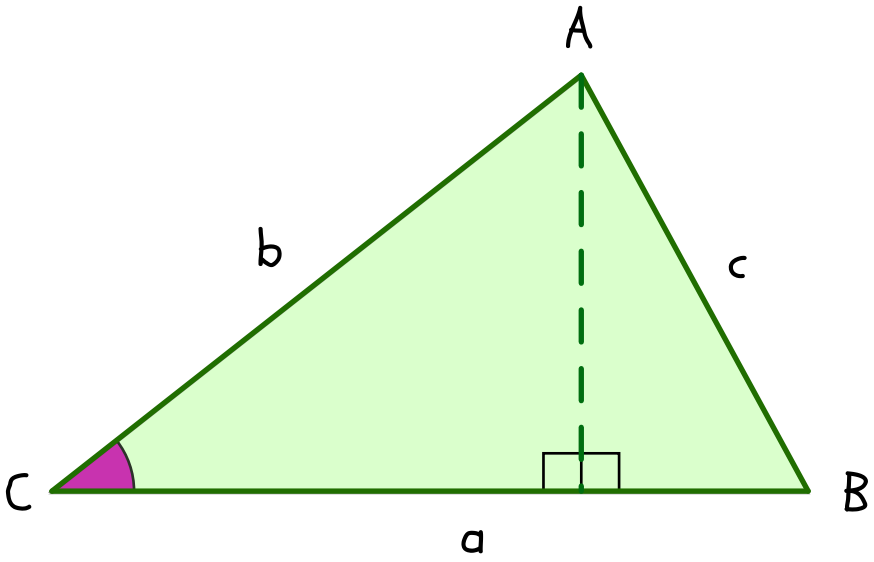


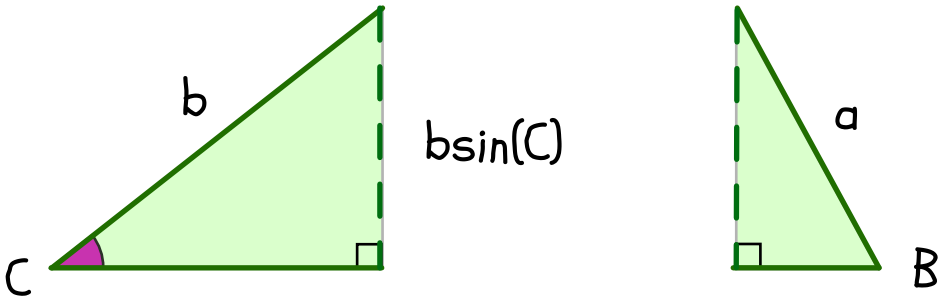




$$c^2 = a^2 + b^2$$

Area of a Triangle



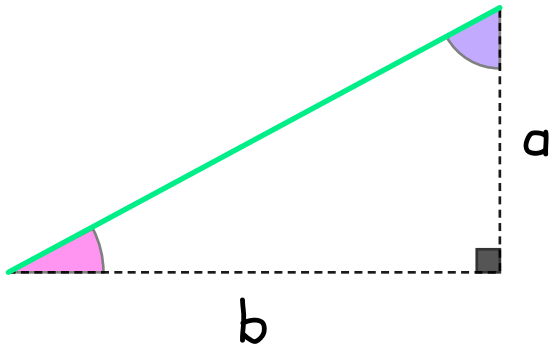


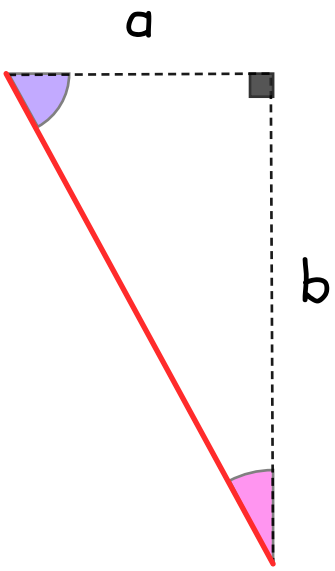
$$\text{area} = \tfrac{1}{2} \times \text{base} \times \text{height}$$

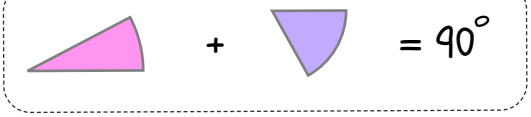
$$\text{area} = \tfrac{1}{2} \times a \times b\sin(C)$$

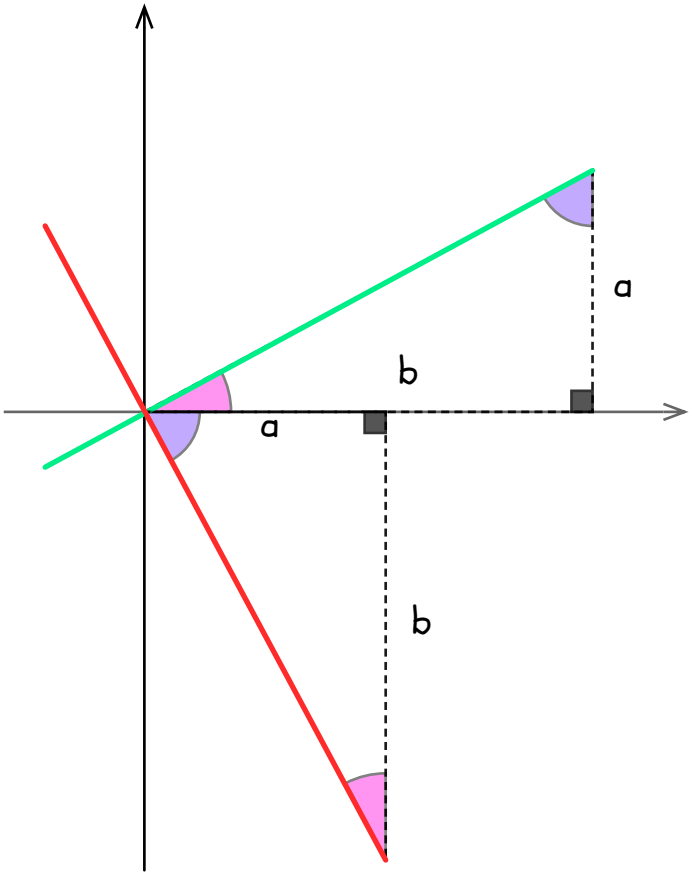
$$\text{area} = \tfrac{1}{2} \times ab\sin(C)$$

Relationship Between Perpendicular Slopes





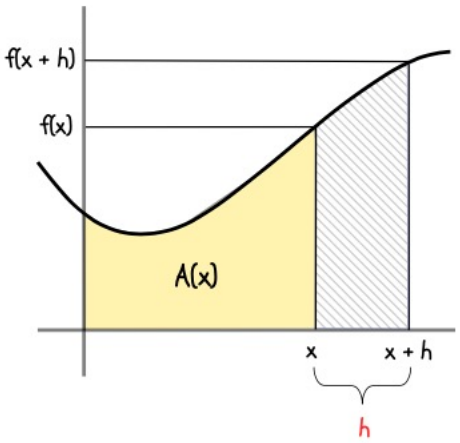


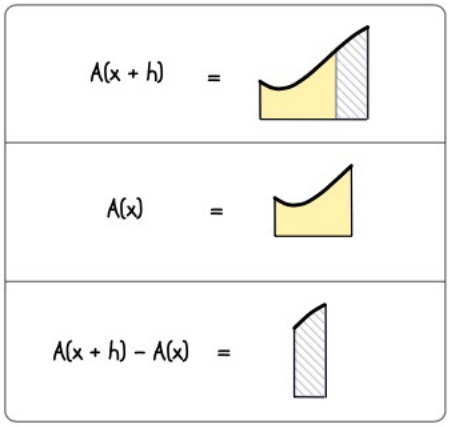


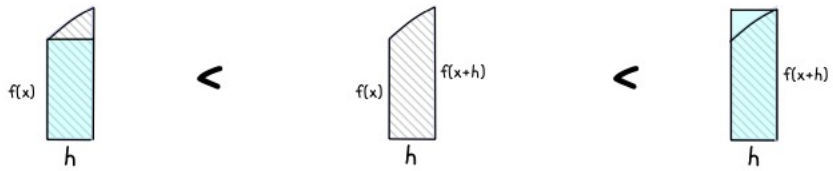
$$\text{green gradient} = \frac{a}{b}$$

$$\text{red gradient} = -\frac{b}{a}$$

Area Under a Curve







$$f(x)\cdot h < A(x+h) - A(x) < f(x+h)\cdot h$$

$$f(x) < \frac{A(x+h) - A(x)}{h} < f(x+h)$$

$$\lim_{h \to 0} f(x) < \lim_{h \to 0} \frac{A(x+h) - A(x)}{h} < \lim_{h \to 0} f(x+h)$$

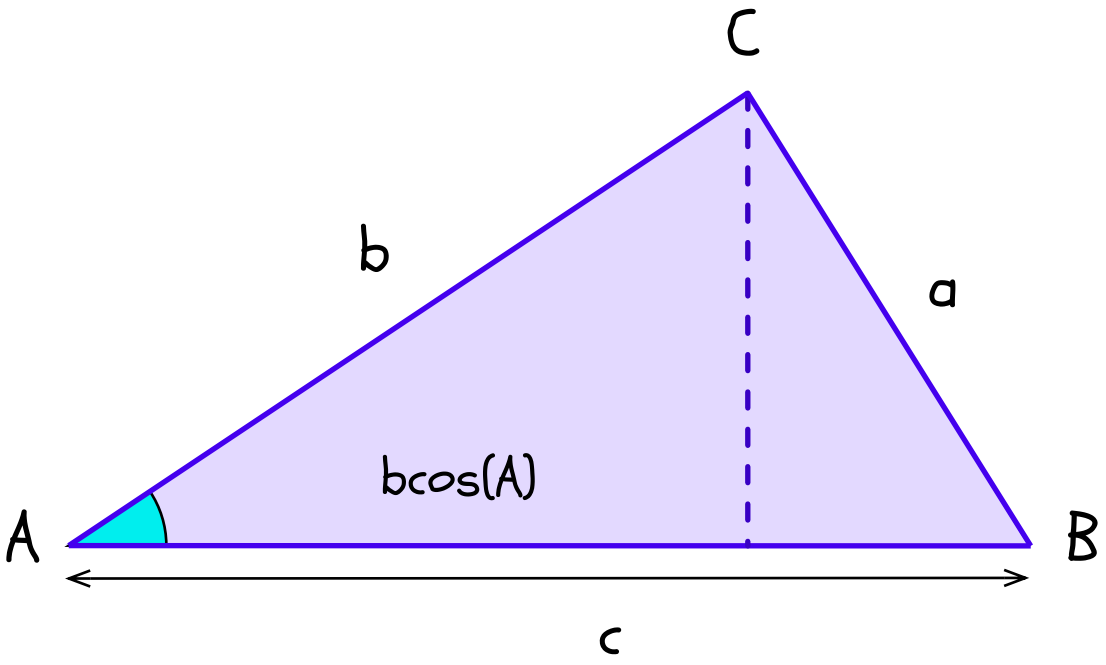
$$f(x) < A'(x) < f(x)$$

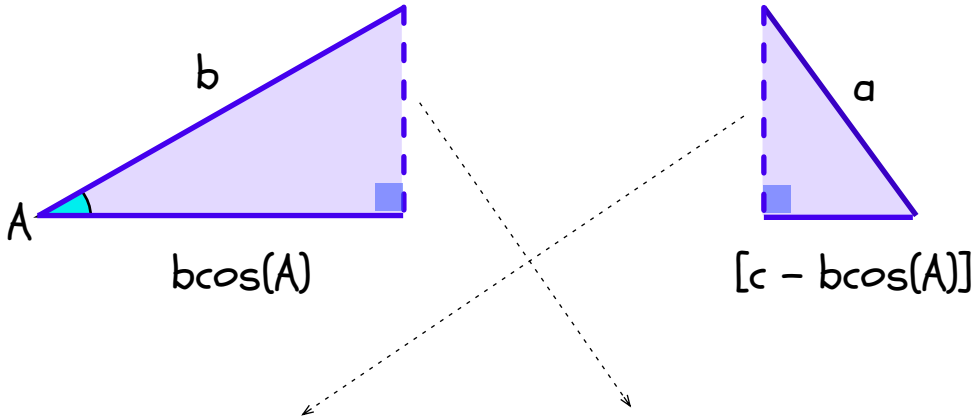
$$A'(x) = f(x)$$

$$\int A'(x)\,dx = \int f(x)\,dx$$

$$A(x) = \int f(x)\,dx$$

Cosine Rule



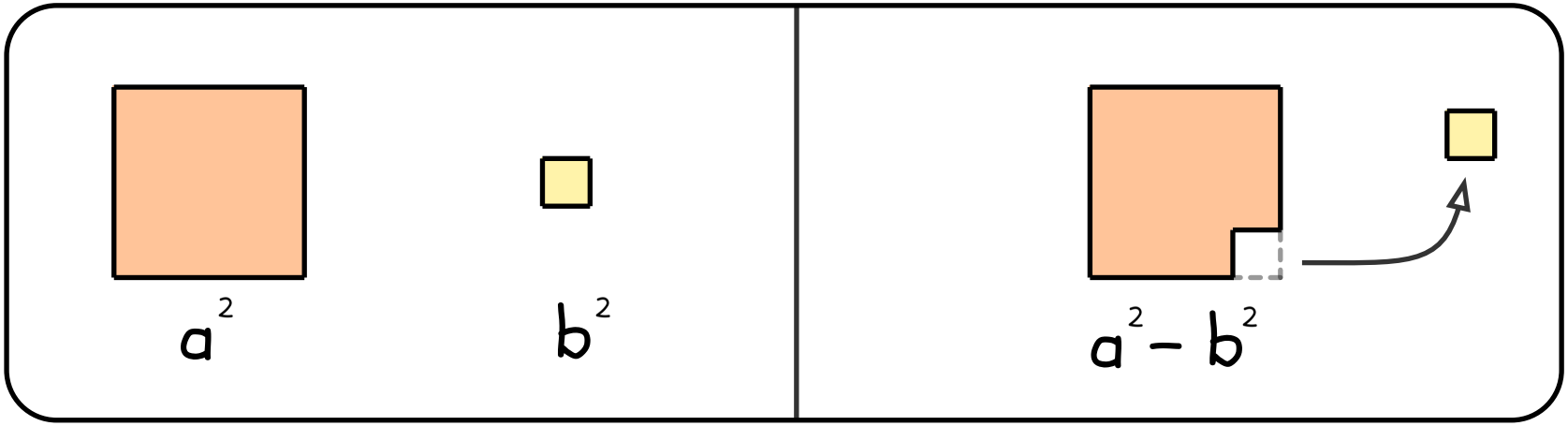


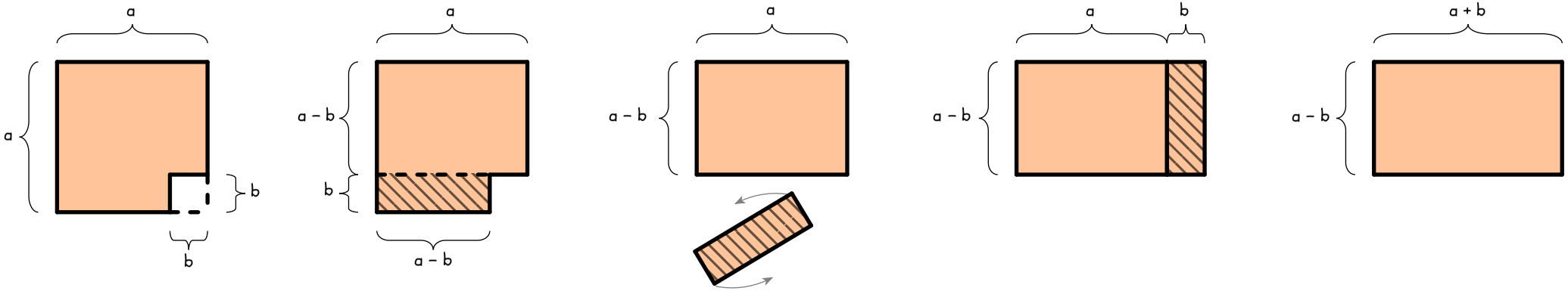
$$a^2 - (c - b\cos(A))^2 = b^2 - [b\cos(A)]^2$$

$$a^2 - c^2 + 2bc\cos(A) - [b\cos(A)]^2 = b^2 - [b\cos(A)]^2$$

$$\therefore \quad a^2 = b^2 + c^2 - 2bc\cos(A)$$

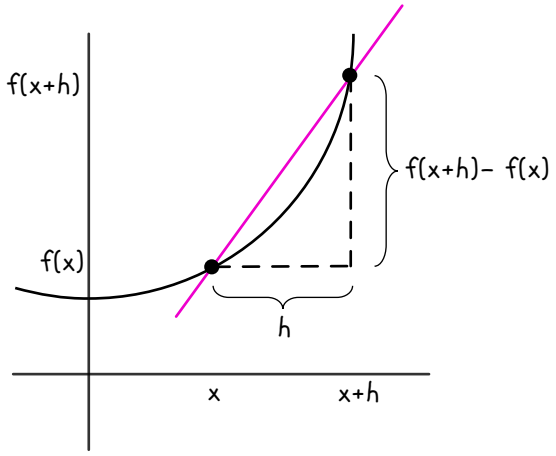
Difference of Two Squared Terms



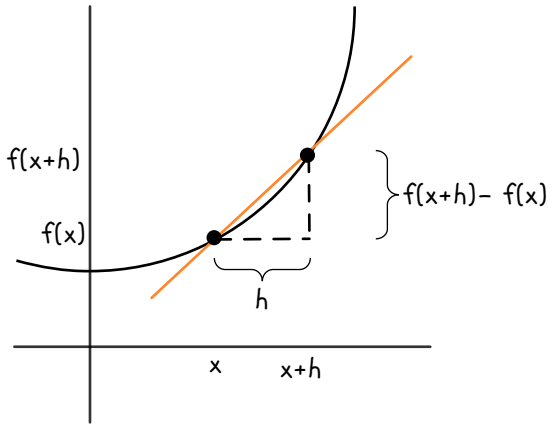


$$a^2 - b^2 = (a + b)(a - b)$$

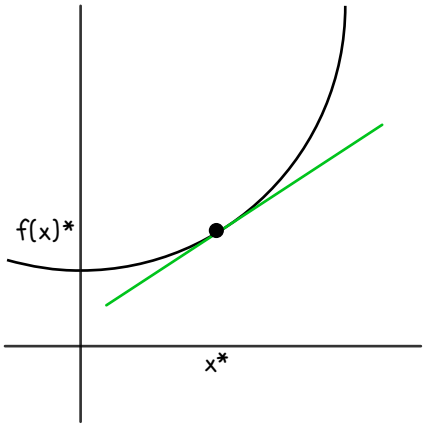
Gradient of a Tangent Line to a Curve



$$f'(x) = \frac{f(x+h) - f(x)}{h}$$



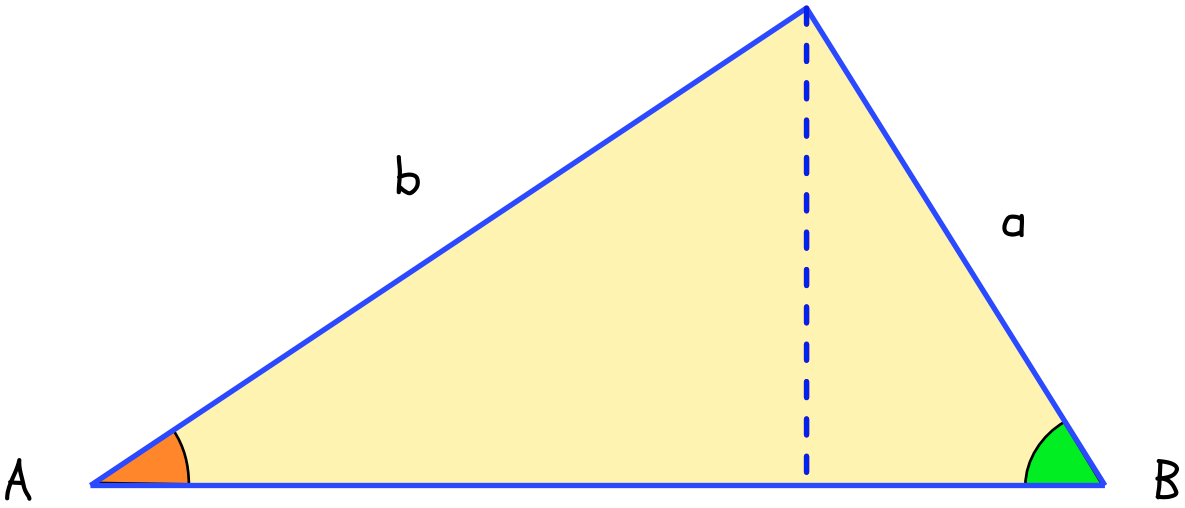
$$f'(x) = \frac{f(x+h) - f(x)}{h}$$

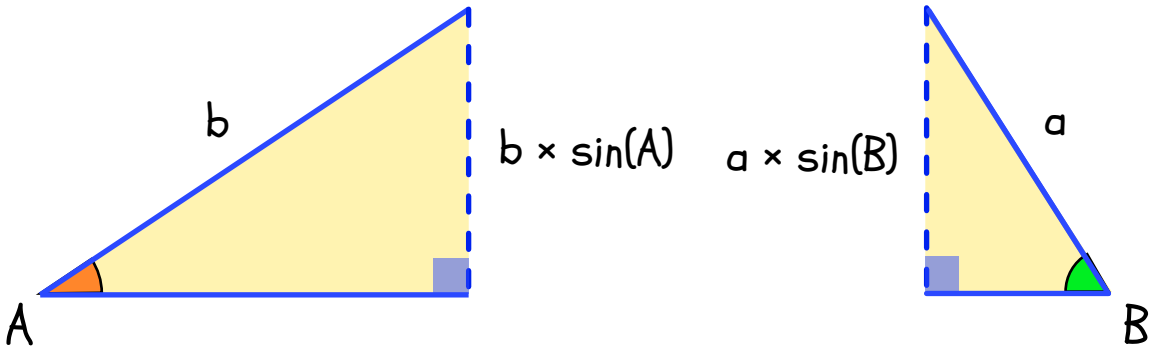


$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

*h is far too small to see on this graph!

Sine Rule





$$b \times \sin(A) = a \times \sin(B)$$

$$\frac{\sin(A)}{\sin(B)} = \frac{a}{b}$$