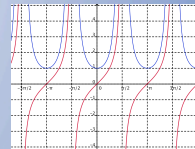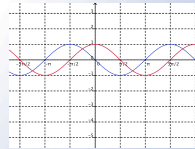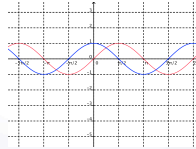$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

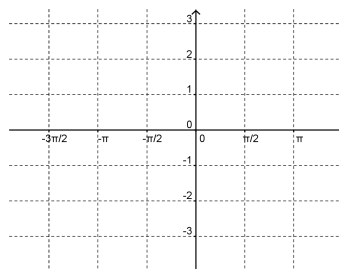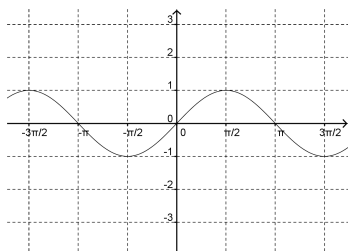$$\frac{d}{dx} \int_a^x f(t)\, dt = f(x)$$
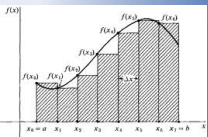
$$\lim_{max\, \Delta x_i \to 0} \sum_1^n f(x_i)\Delta x_i = \int_a^b f(x)\, dx$$

$$\int_a^b f(x)\, dx = F(b) - F(a)$$
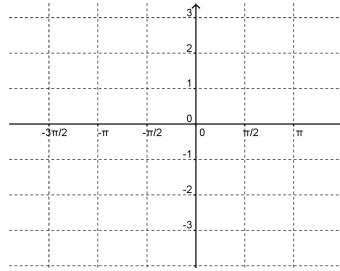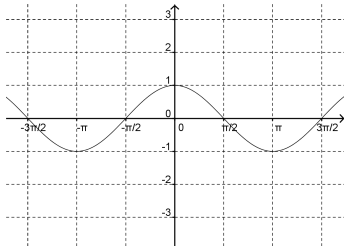
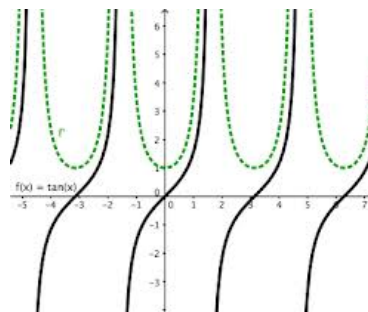# Derivatives of Trigonometric Functions

The derivative of $f(x) = \sin x$

Use the definition of the derivative to find $D_x(\sin x)$.

11 Derivatives Trig

The derivative of *f(x) = cos x*

Here is a graph of y = tan x (black) and its derivative (green). Can you guess what it might be?

11 Derivatives Trig

EX 1   Find y' for these functions.

a) $y = \sin^2 x$

b) $y = \cot x$

c) $y = \dfrac{x \cos x + \sin x}{x^2 + 1}$

d) $y = \sin^2 x + \cos^2 x$

EX 2   Find the equation of the tangent line to *y = cot x at x = π/4*