

TRIGONOMETRIC GRAPHS: TANGENT AND COTANGENT

$$y = A \tan B(x - h) + k$$

or

$$y = A \cot B(x - h) + k$$

A = rise or fall

B = effects the period

$$\text{Period} = \frac{\pi}{B}$$

x = h: phase shift (horizontal shift)

y = k: center line (vertical shift)

Note: tangent and cotangent are reciprocal functions so they will be opposites

1. $y = \tan x$

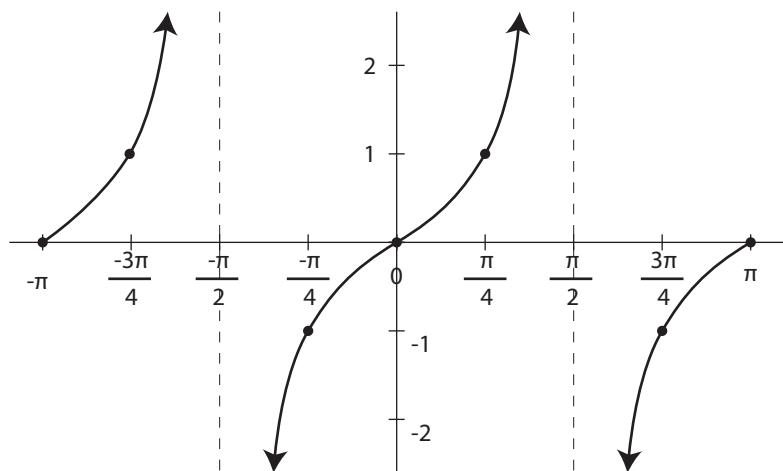
A = Rise

B = 1

Period = π

x = h: x = 0

y = k: y = 0



2. $y = \cot x$

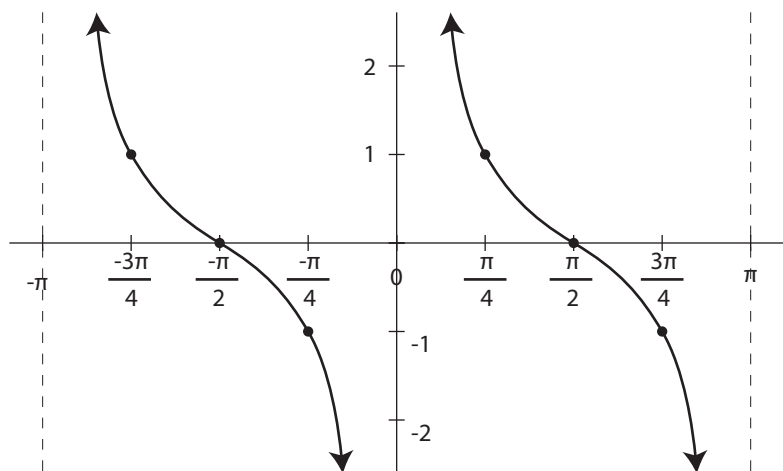
A = Fall

B = 1

Period = π

x = h: x = 0

y = k: y = 0



3. $y = \tan 2x + 1$

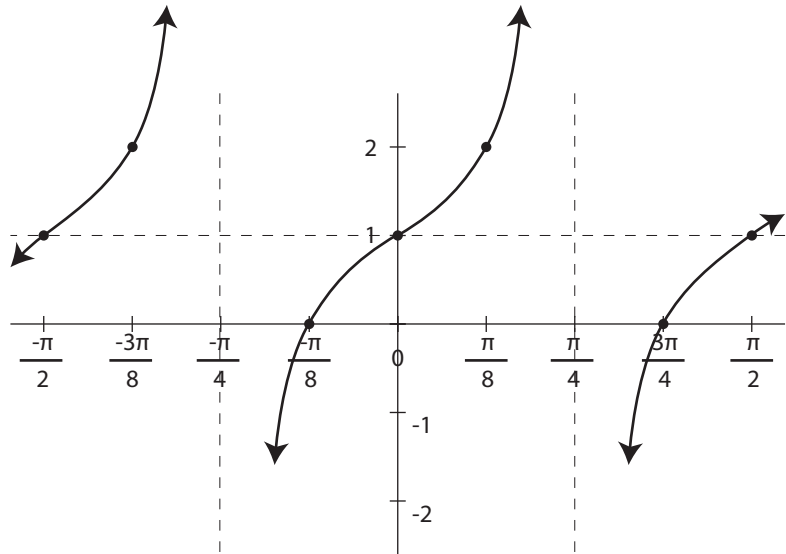
A = rise

B = 2

Period = $\frac{\pi}{2}$

x = h: x = 0

y = k: y = 1



4. $y = \frac{1}{3} \cot 2(x - \frac{\pi}{2})$

A = fall

B = 2

Period = $\frac{\pi}{2}$

x = h: x = $\frac{\pi}{2}$

y = k: y = 0

Graphing Window:

- period \leq (x - h) \leq period

$$-\frac{\pi}{2} \leq x - \frac{\pi}{2} \leq \frac{\pi}{2}$$

$$0 \leq x \leq \pi$$

