

Lesson 6.1 – Graphs of Tangent & Cotangent

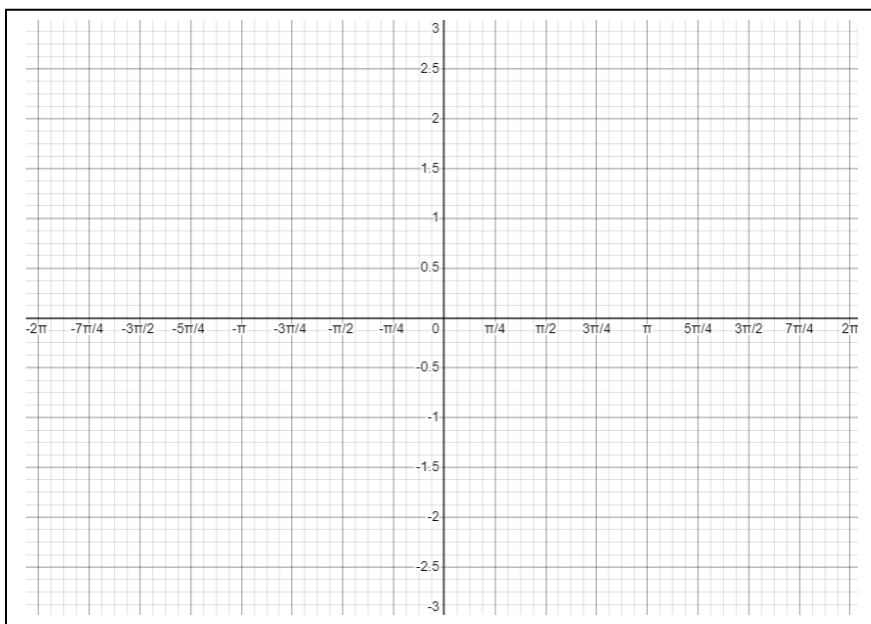
I. Warm-Up

1. Complete the table below (You're all PROS at this now!)

x	$-\pi$	$-\frac{3\pi}{4}$	$-\frac{\pi}{2}$	$-\frac{\pi}{4}$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	π
$y = \tan x$	0	1	Undef	-1	0	1	Undef	-1	0

II. Graph of $y = \tan(x)$

2. Copy the graph of tangent. **Check Desmos.**



Properties of $y = \tan x$

No amplitude

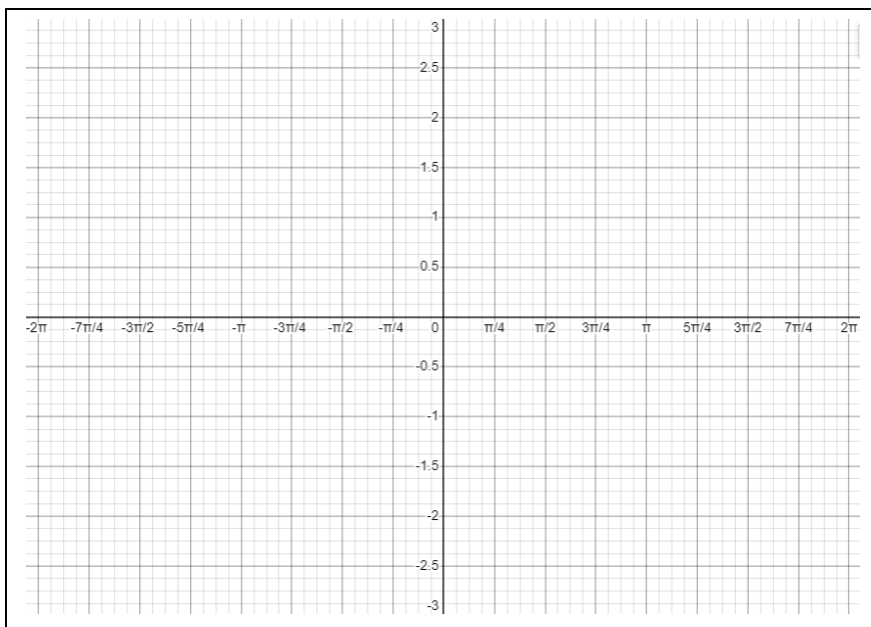
Period = π

Goes through (0,0)

Vertical asymptote = $-\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}$

= $\frac{(2n+1)\pi}{2}$ where $n \in \mathbb{Z}$.

III. Graph of $y = \cot(x)$ Check Desmos.



Properties of $y = \cot x$

No amplitude

Period = π

Goes through $(\frac{\pi}{2}, 0)$

Vertical asymptote = $-\pi, 0, \pi, 2\pi$

= $n\pi$ where $n \in \mathbb{Z}$.

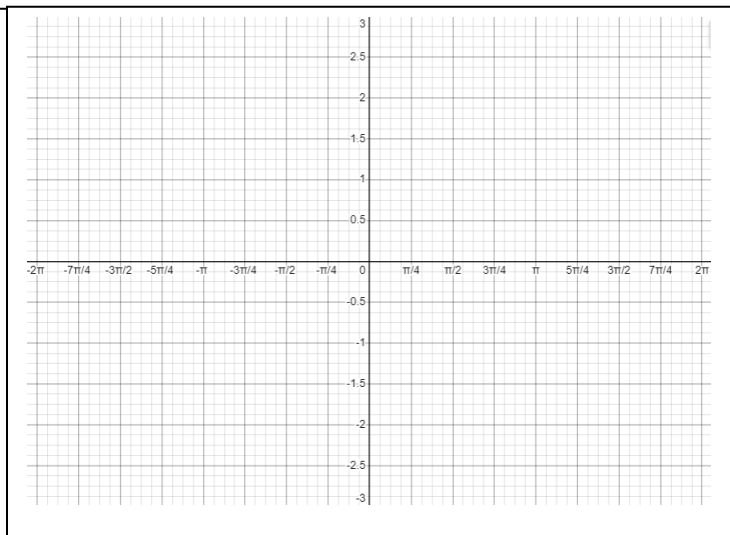
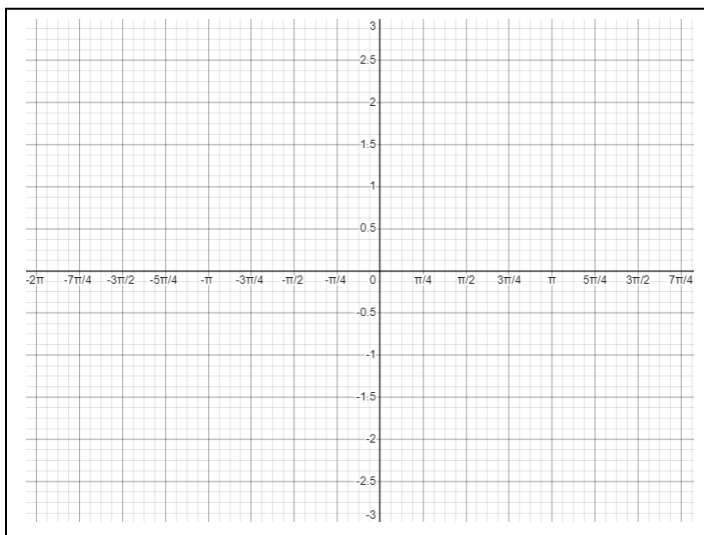
IV. Graphing $y = A \cdot \tan B(x - C) + D$

Identify the period and the phase shift. Then graph the function. Draw 3 full periods.

3. $y = 3 \tan\left(2x + \frac{\pi}{4}\right)$

Check Desmos.

4. $y = \tan\left(\frac{\pi x}{3} + \pi\right)$



V. Graphing $y = A \cdot \cot B(x - C) + D$

Identify the period and the phase shift. Then graph the function. Draw 3 full periods.

5. $y = 3 \cot\left(\frac{x}{2} - \frac{\pi}{2}\right)$

Check Desmos.

6. $y = -\cot(\pi x - 2\pi)$

