

§4.6B: Graphing Trig Functions

“I WILL...

...identify phase shifts and frequency”

I. Transformation of Graph Equation

- A. Equation: _____
- B. A is the _____ of _____ for Sine and Cosine
- C. B is the _____
- D. C is the _____ or _____
- E. D is the _____
- F. _____ is defined as the number of cycles per second

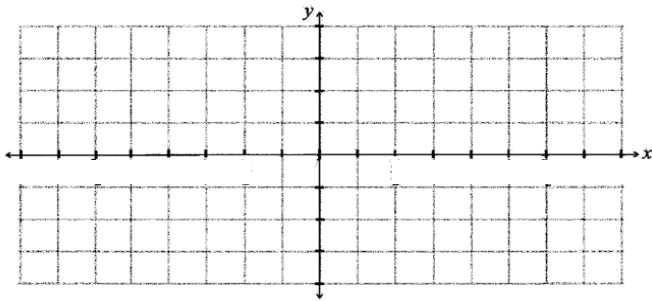
II. Steps

- A. Identify A , B , C , and D from the equation, $y = A \text{ trig } B(x - C) + D$
- B. Identify the horizontal shift
 - 1. Period: — or — (for Tan and Cot)
- C. Use the period to identify the spacing
 - 1. Anchor Points Equation: ———
- D. Start with the horizontal shift as the middle of the trig table (at the origin) and apply the spacing before and after

III. Trig Tables

$y = \sin(x)$			$y = \cos(x)$			$y = \tan(x)$		
x	y		x	y		x	y	
$y = \csc(x)$			$y = \sec(x)$			$y = \cot(x)$		
x	y		x	y		x	y	

Ex 1: Graph $y = \sin x + 1$ in one period and identify amplitude, period, vertical shift, phase shift, domain (entire graph), and range

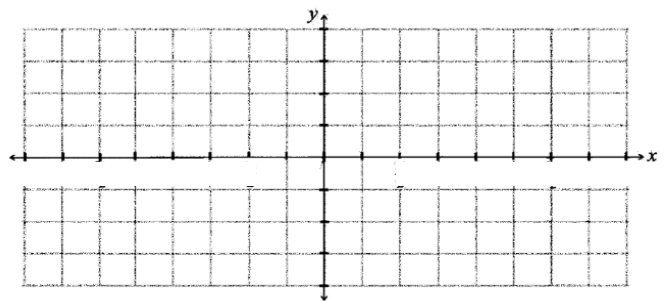


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Ex 2: Graph $y = \frac{1}{2} \cos \theta - 1$ from $[-2\pi, 2\pi]$ and identify amplitude, period, vertical shift, and phase shift, domain, and range

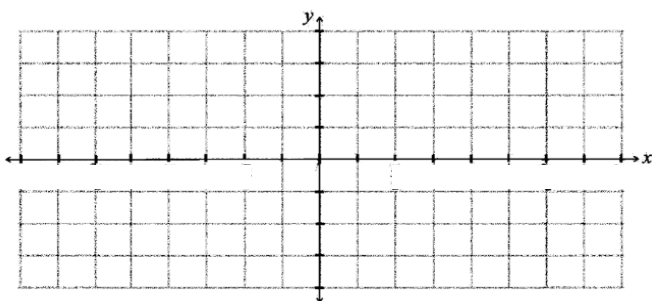


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Your Turn: Graph $y = \frac{1}{4} \sin t + 1$ from $[-2\pi, 2\pi]$ and identify amplitude, period, vertical shift, phase shift, domain, and range

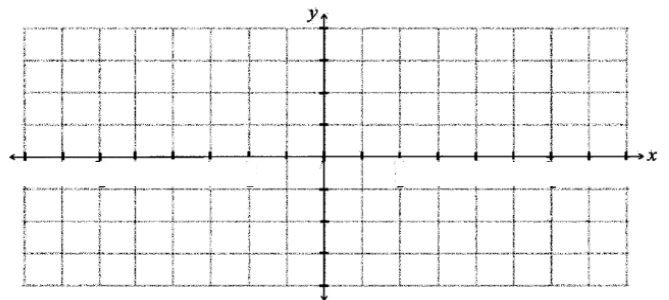


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Ex 3: Given $y = 2 \tan x + 1$ from $[-\pi, \pi]$ and identify amplitude, period, vertical shift, phase shift, domain, and range

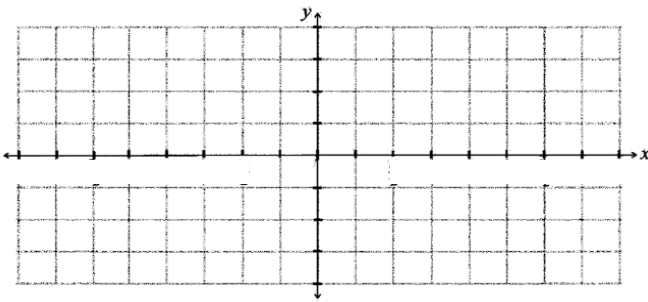


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Ex 4: Given $y = \frac{1}{2} \csc 2x + 1$ from $[-2\pi, 2\pi]$ and amplitude, period, vertical shift, phase shift, domain, and range

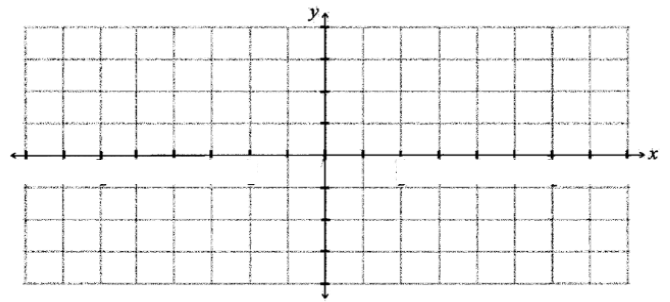


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Your Turn: Given $y = \frac{1}{3} \sec x - 1$ from $[-2\pi, 2\pi]$ and identify period, vertical shift, phase shift, domain, and range



Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

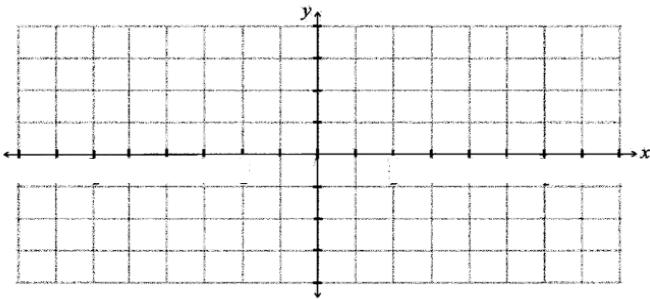
Ex 5: Given $y = 5 \sin 2 \left(x - \frac{\pi}{6} \right) + 1$, identify amplitude, period, vertical shift, phase shift, and points to graph in one period

Ex 6: Given $y = 3 \cos 4 \left(x + \frac{\pi}{2} \right) - 1$, identify amplitude, period, vertical shift, phase shift, and points to graph in one period

Ex 7: Given $y = 4 \sin(\pi x + 2) - 5$, identify amplitude, period, vertical shift, and phase shift and points from $[-2\pi, 2\pi]$

Your Turn: Given $y = 2 \sin 3 \left(x + \frac{\pi}{3} \right) - 5$, identify amplitude, period, vertical shift, phase shift, and points to graph in one period

Ex 8: Graph $y = -2\cos 3\left(x + \frac{\pi}{3}\right)$ in one period and identify amplitude, period, vertical shift, phase shift, domain, and range

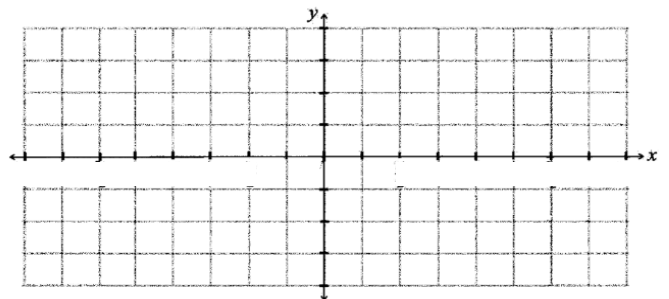


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Ex 9: Graph $y = 2\sin(4x + \pi) - 1$ from $[0, 2\pi]$ and identify amplitude, period, vertical shift, phase shift, domain, and range

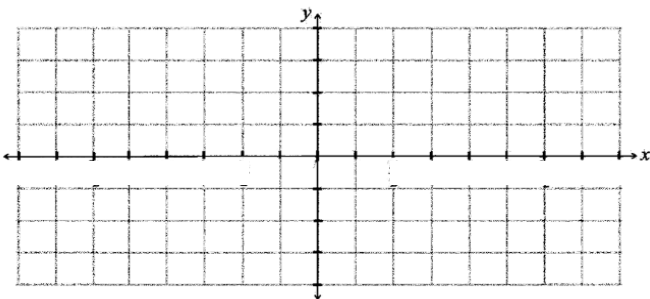


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Ex 10: Given $y = -2\tan\left(x + \frac{\pi}{2}\right) - 1$ from $[-\pi, \pi]$ and amplitude, period, vertical shift, phase shift, domain, and range

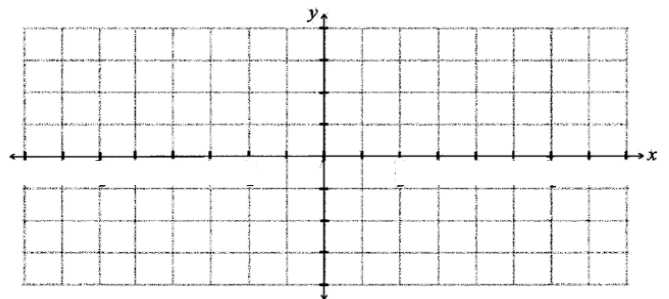


Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____

Your Turn: Given $y = \sec 2(x + \pi) + 2$ from $[-2\pi, 2\pi]$ and identify period, vertical shift, phase shift, domain, and range



Amp: _____ Period: _____ V.S.: _____

PS: _____ A.P.: _____

Domain: _____ Range: _____