

Unit 2 Graphing Trig Morning Review

1. $y = -2 \tan\left(2\theta - \frac{\pi}{4}\right) - 1$

vertical stretch: _____

Graph:

period: _____

phase shift: _____

vertical shift: _____

2. $y = -2 \sec\left(\frac{\theta}{4} + \frac{3\pi}{2}\right) + 1$

vertical stretch: _____

Graph:

period: _____

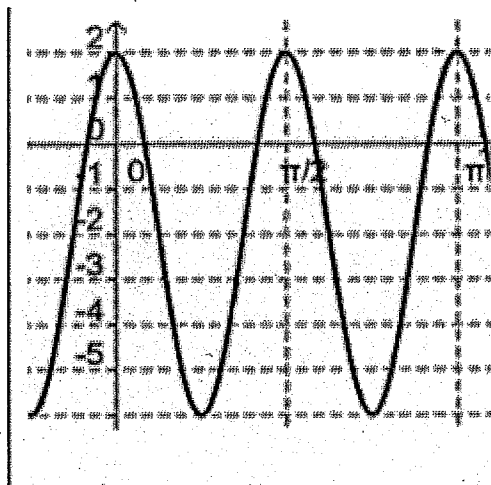
phase shift: _____

vertical shift: _____

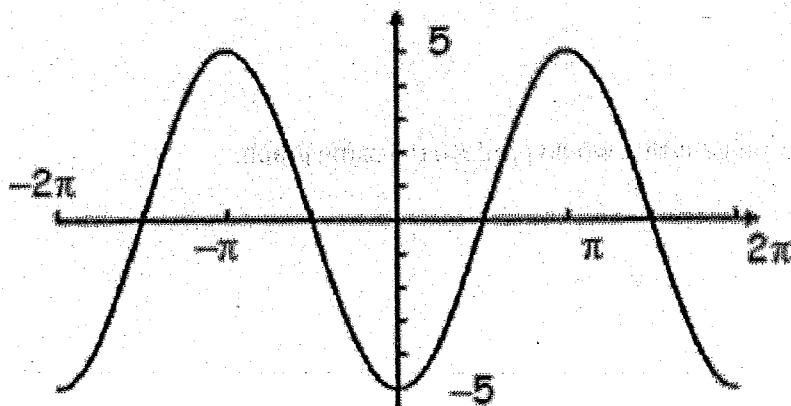
3. Given: $y = \tan \theta$. Write a function of cotangent that would produce the same graph.

4. Describe the difference in period between $y = 2\cos(2\theta)$ with that of $y = 2\cos(7\theta)$.

5. Write two functions for the graph below; one for cosine and one for sine.



6. Write two functions for the graph below; one for cosine and one for sine.



Unit 2 Graphing Trig Morning Review

key

1. $y = -2 \tan\left(2\theta - \frac{\pi}{4}\right) - 1$

$$y = -2 \tan\left[2\left(\theta - \frac{\pi}{8}\right)\right] - 1$$

vertical stretch: 2

period: $\frac{\pi}{2}$

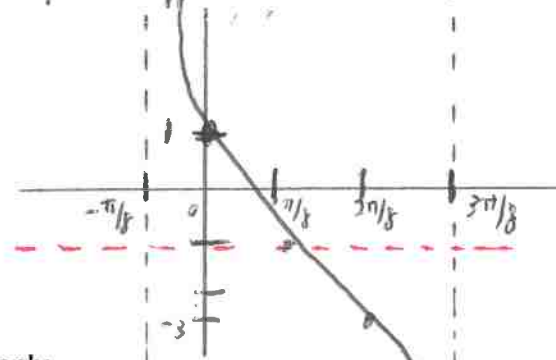
phase shift: right $\frac{\pi}{8}$

vertical shift: down 1

$$\begin{aligned} a &= -2 & \text{period} &= \frac{\pi}{b} \\ b &= 2 & \text{period} &= \frac{\pi}{2} \\ c &= \frac{\pi}{8} & I &= \frac{1}{4} \cdot P \rightarrow \frac{1}{4} \cdot \frac{\pi}{2} = \frac{\pi}{8} \\ d &= -1 \end{aligned}$$

Graph:

θ	$-\frac{2\pi}{8} + \frac{\pi}{8}$	$-\frac{\pi}{8} + \frac{\pi}{8}$	$0 + \frac{\pi}{8}$	$\frac{\pi}{8} + \frac{\pi}{8}$	$\frac{2\pi}{8} + \frac{\pi}{8}$	$\frac{3\pi}{8} + \frac{\pi}{8}$
$\tan 2\theta$	und.	-1	0	1	und.	und.
$-2 \tan 2\theta$	und.	2	0	-2	und.	und.



2. $y = -2 \sec\left(\frac{\theta}{4} + \frac{3\pi}{2}\right) + 1$

vertical stretch: 2

period: 8π

phase shift: left 6π

vertical shift: up 1

$$y = -2 \sec\left[\frac{1}{4}\left(\theta + 6\pi\right)\right] + 1$$

$$\begin{aligned} a &= -2 & \text{period} &= \frac{2\pi}{b} \\ b &= \frac{1}{4} & \text{period} &= \frac{2\pi}{1/4} = 2\pi \cdot \frac{4}{1} = 8\pi \\ c &= 6\pi & d &= 1 \end{aligned}$$

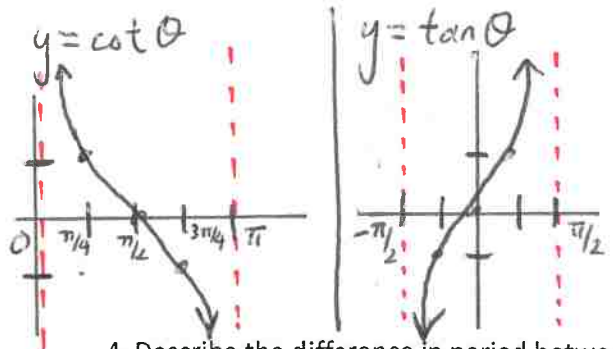
$$\begin{aligned} I &= \frac{1}{4} \cdot P \\ I &= \frac{1}{4} \cdot 8\pi \\ I &= 2\pi \end{aligned}$$

Graph:

θ	$0 - 6\pi$	$2\pi - 6\pi$	$4\pi - 6\pi$	$6\pi - 6\pi$	$8\pi - 6\pi$
$\sec \theta$	1	0	-1	0	1
$-2 \sec \theta$	-2	0	2	0	-2



3. Given: $y = \tan \theta$. Write a function of cotangent that would produce the same graph.



$$y = -\cot\left(\theta + \frac{\pi}{2}\right)$$

$$\begin{aligned} a &= 1 \\ b &= 1 \\ c &= \frac{\pi}{2} \\ d &= 0 \end{aligned}$$

4. Describe the difference in period between $y = 2\cos(2\theta)$ with that of $y = 2\cos(7\theta)$.

$$y = 2\cos(2\theta)$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{2}$$

$$\text{period} = \pi$$

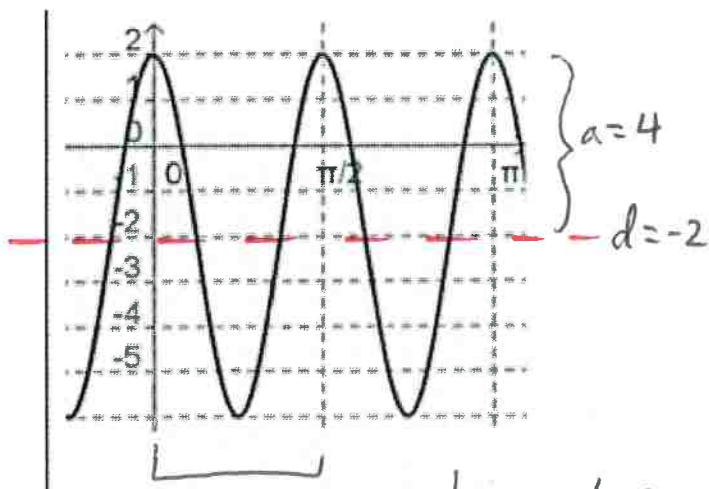
$$y = 2\cos(7\theta)$$

$$\text{period} = \frac{2\pi}{b} \rightarrow \frac{2\pi}{7}$$

$$\text{period} = \frac{2}{7}\pi$$

$y = 2\cos(7\theta)$ has a period that is $\frac{2}{7}$ that of $y = 2\cos(2\theta)$

5. Write two functions for the graph below; one for cosine and one for sine.



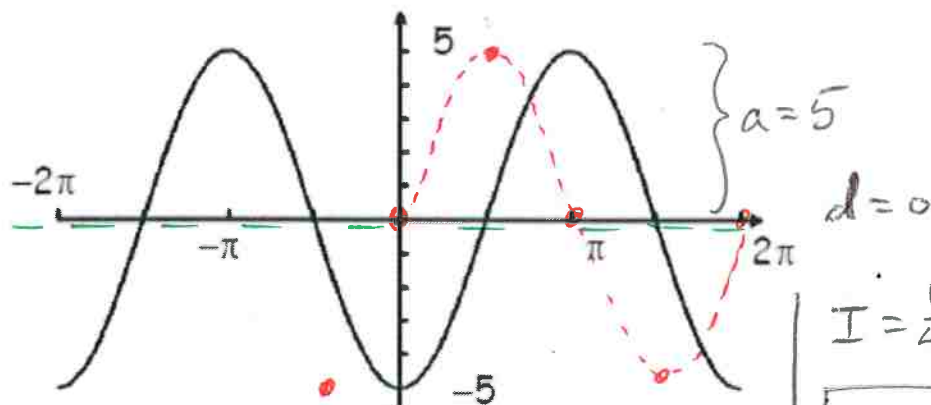
$$a) y = 4 \cos(4\theta) - 2$$

$$b) y = 4 \sin\left[4\left(\theta + \frac{\pi}{8}\right)\right] - 2$$

$$\left. \begin{array}{l} \text{period} = \frac{\pi}{2} \\ \frac{\pi}{2} = \frac{2\pi}{b} \\ b\pi = 4\pi \end{array} \right| b = 4$$

$$\left. \begin{array}{l} I = \frac{1}{4} \cdot P \\ I = \frac{1}{4} \cdot \frac{\pi}{2} \\ I = \pi/8 \end{array} \right|$$

6. Write two functions for the graph below; one for cosine and one for sine.



$$\text{period} = 2\pi \quad \text{period} = \frac{2\pi}{b} \Rightarrow \frac{2\pi}{1} = 2\pi$$

$$\begin{array}{l} a = -5 \\ b = 1 \\ c = 0 \\ d = 0 \end{array}$$

$$y = -5 \cos(\theta)$$

$$d = 0$$

$$I = \frac{1}{4} \cdot P \rightarrow \frac{1}{4} \cdot 2\pi = \frac{\pi}{2}$$

$$y = 5 \sin\left(\theta - \frac{\pi}{2}\right)$$