

Name: _____

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HW 4.5 Graphing Cosine and Cosecant and Cotangent Function with Transformations1. Indicate if the following formulas are true for all values of θ :

i) $\cos \theta = -\cos \theta$

ii) $\sin \theta = -\sin \theta$

iii) $\cos \theta = \cos(-\theta)$

iv) $\tan \theta = -\tan(-\theta)$

vi) $\sec \theta = \frac{1}{\cos(-\theta)}$

vii) $\sin \theta = \frac{\sin 2\theta}{2\cos \theta}$

viii) $\sin \theta = \sin(\pi - \theta)$

ix) $\tan(\theta_1 + \theta_2) = \frac{\tan \theta_1 + \tan \theta_2}{1 - \tan \theta_1 \tan \theta_2}$

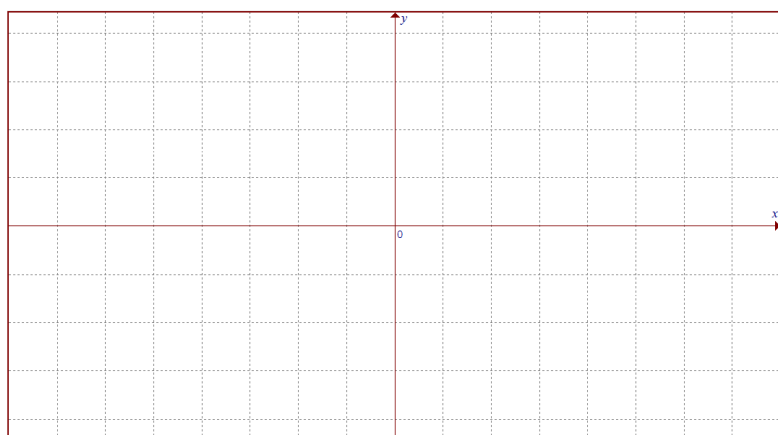
2. Find a general formula for the asymptotes, find domain, range, and period.

a) $y = 2 \csc\left(\theta + \frac{\pi}{3}\right) - 2$	b) $y = -2 \sec\left(\theta + \frac{2\pi}{3}\right) - 1$
c) $y = -3 \tan \pi(-2\theta + 3) + 4$	d) $y = -\cot\left(2\theta - \frac{\pi}{5}\right) - 4$
e) $y = 3 \csc \frac{\pi}{4}\left(2\theta + \frac{2}{3}\right) - 2$	f) $y = -3 \sec \frac{3\pi}{8}(3\theta + 2) + 1$

g) $y = 3 \tan\left(5x - \frac{\pi}{3}\right) + 4$

h) $y = 5 \cot \pi\left(3x - \frac{7}{6}\right) - 5$

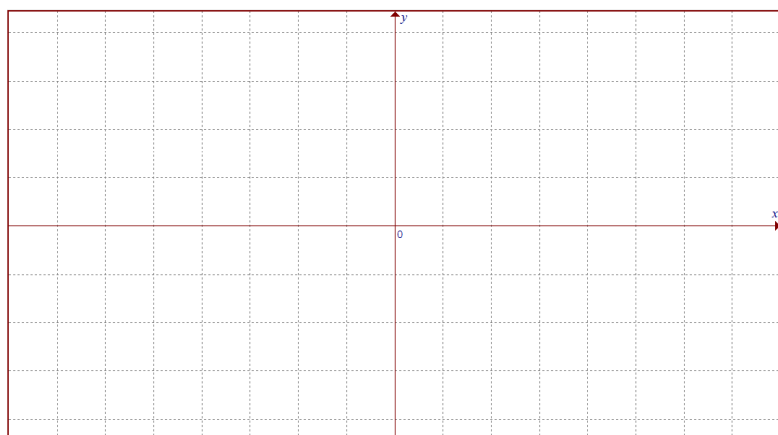
3. Graph the corresponding Sine/Cosine function, and then graph the equation: $y = 2 \csc\left(\theta + \frac{\pi}{2}\right) - 0.5$



Indicate domain and range:

Find a general formula for all Vert. Asymptote

4. Graph the corresponding Sine/Cosine function, and then graph the equation: $y = 0.5 \sec\left(\theta - \frac{2\pi}{3}\right) + 1$

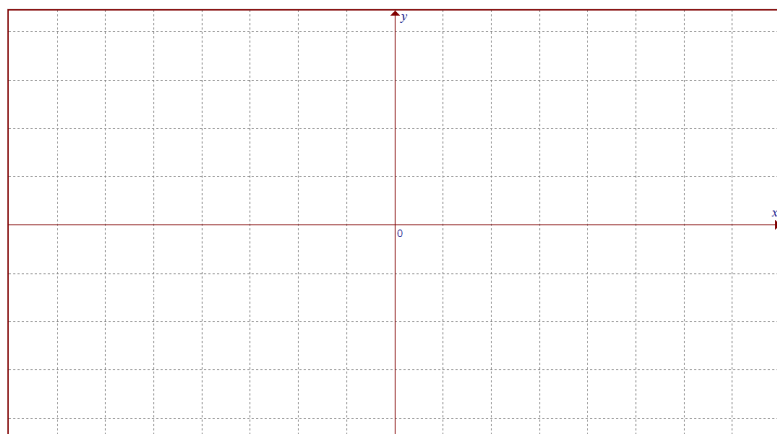


Indicate the domain and range:

Find a general formula for all Vert. Asymptote

5. Find the period, amplitude, and phase shift of $y = -2 \sin\left(\frac{x}{4} - \frac{\pi}{3}\right)$

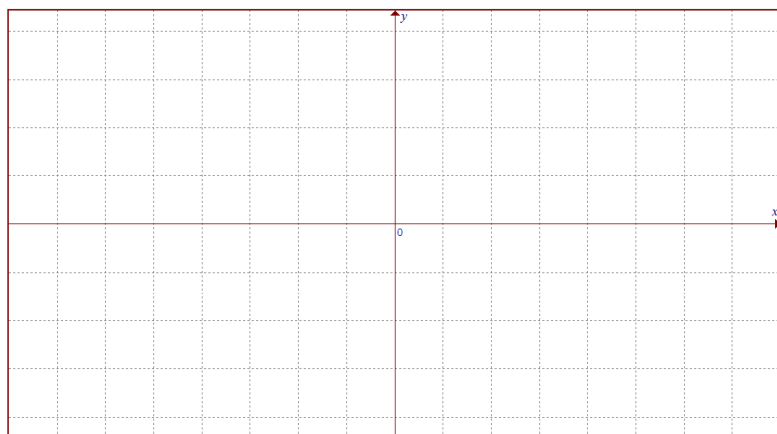
6. Graph the function on the graph provided: $y = 3 \tan \frac{\pi}{4}(-\theta + 2) + 1$



Indicate the domain and range:

Find a general formula for all Vert. Asymptote

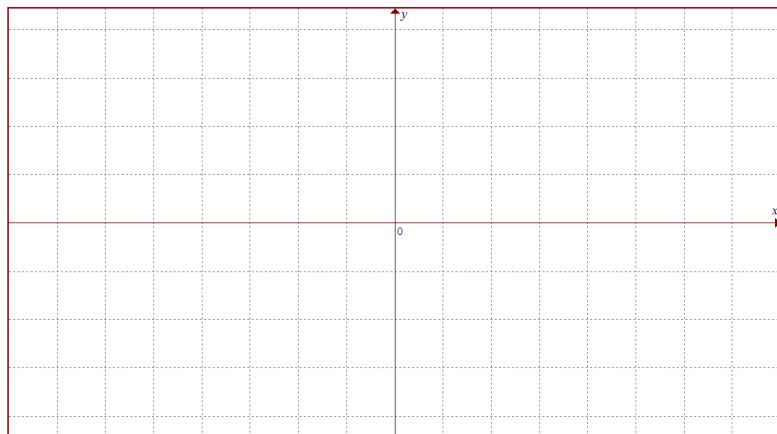
7. Graph the function on the graph provided: $y = 3 \cot 2\left(\theta - \frac{\pi}{3}\right) + 2$



Indicate the domain and range:

Find a general formula for all Vert. Asymptote

8. Graph the function on the graph provided: $y = 3 \cot \frac{2\pi}{5}(\theta - 2) + 2$



Indicate the domain and range:

Find a general formula for all Vert. Asymptote

9. Prove the identity: $\frac{\tan x}{1 - \cot x} + \frac{\cot x}{1 - \tan x} = \sec x \csc x + 1$

10. Suppose $\sec x + \tan x = \frac{22}{7}$ Find the value of $\csc x + \cot x = ?$ (aime)

11. Find the value of $10 \cot(\cot^{-1} 3 + \cot^{-1} 7 + \cot^{-1} 13 + \cot^{-1} 21)$ (aime)

12. Challenge: Evaluate $(\sin 1^\circ)(\sin 3^\circ)(\sin 5^\circ) \dots (\sin 177^\circ)(\sin 179^\circ)$ [No Calculators: AoPs]