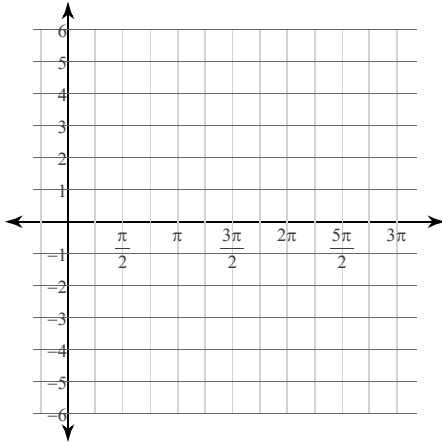


Graphs of Trig Functions

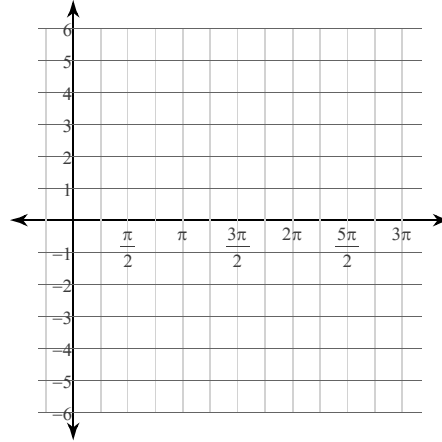
Date _____ Period _____

Find the amplitude, the period in radians, the phase shift in radians, the vertical shift, and the minimum and maximum values. Then sketch the graph using radians.

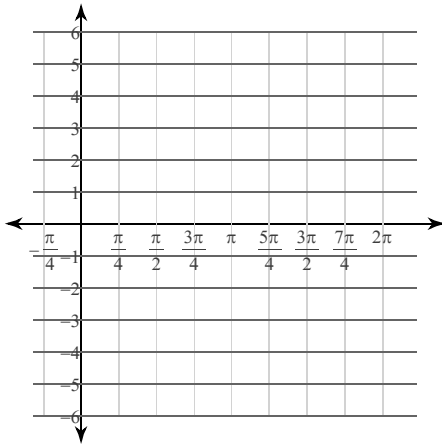
1) $y = 3\sin\left(\theta - \frac{5\pi}{6}\right)$



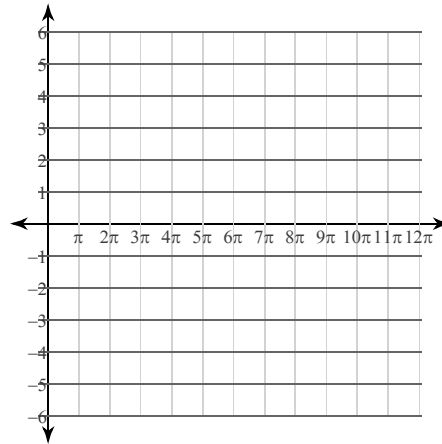
2) $y = 3\cos \theta$



3) $y = 2\sin\left(-3\theta - \frac{\pi}{2}\right) + 2$



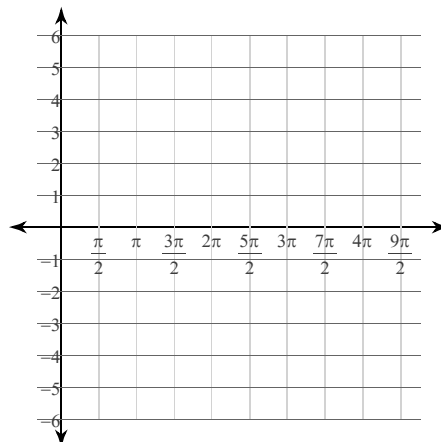
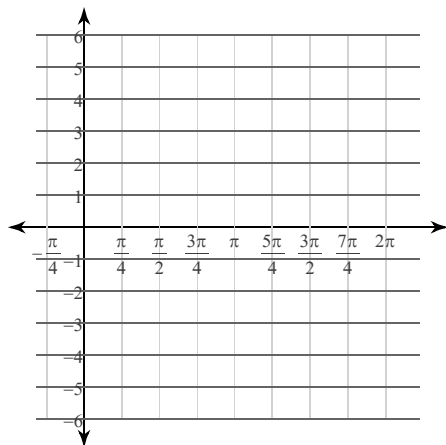
4) $y = \cos\left(\frac{\theta}{4} + \frac{\pi}{4}\right) - 2$



Find the period in radians, the phase shift in radians, the vertical shift, and two vertical asymptotes (if any). Then sketch the graph using radians.

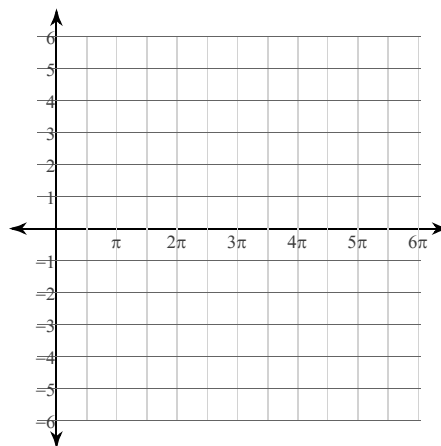
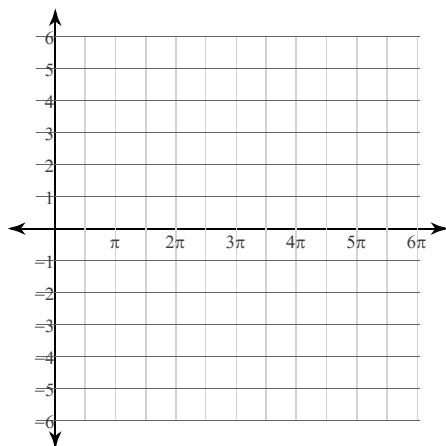
$$5) y = \tan\left(2\theta - \frac{11\pi}{6}\right) - 1$$

$$6) y = 2\cot\left(\frac{\theta}{3} + \frac{5\pi}{6}\right)$$



$$7) y = \frac{1}{2} \cdot \csc\left(\frac{\theta}{2} + \frac{3\pi}{4}\right)$$

$$8) y = 3\sec\left(\frac{\theta}{2} - \frac{3\pi}{4}\right)$$



Find the transformations required to obtain the graph starting with a basic trig function.

$$9) y = 5\cos\left(\theta + \frac{5\pi}{6}\right)$$

$$10) y = 5 + \sin\left(8\theta + \frac{3\pi}{4}\right)$$

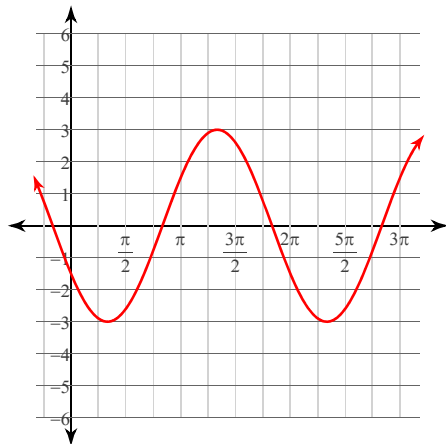
$$11) y = \sin\left(\theta - \frac{\pi}{6}\right) - 2$$

$$12) y = \frac{1}{10} \cdot \tan\left(\theta - \frac{\pi}{3}\right)$$

Graphs of Trig Functions

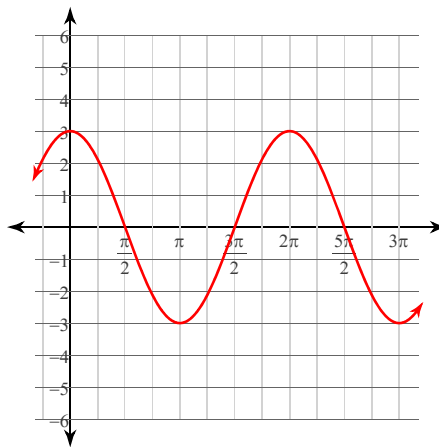
Find the amplitude, the period in radians, the phase shift in radians, the vertical shift, and the minimum and maximum values. Then sketch the graph using radians.

1) $y = 3\sin\left(\theta - \frac{5\pi}{6}\right)$



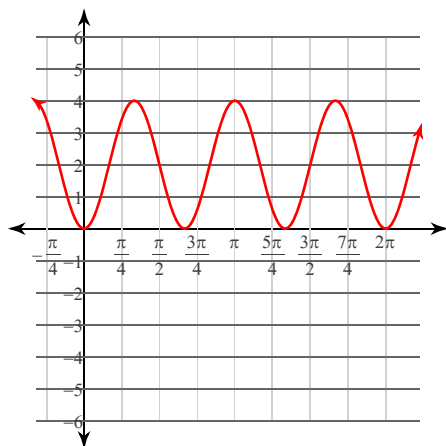
Amplitude: 3
 Period: 2π
 Phase shift: Right $\frac{5\pi}{6}$
 Vert. shift: None
 Min: -3
 Max: 3

2) $y = 3\cos \theta$



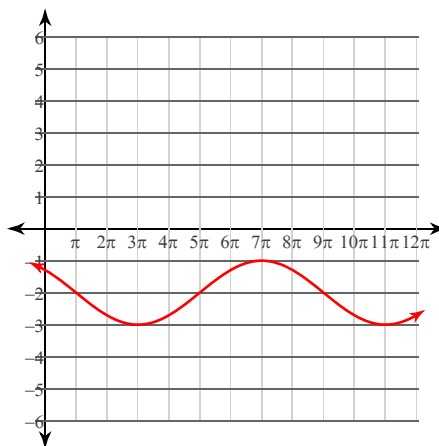
Amplitude: 3
 Period: 2π
 Phase shift: None
 Vert. shift: None
 Min: -3
 Max: 3

3) $y = 2\sin\left(-3\theta - \frac{\pi}{2}\right) + 2$



Amplitude: 2
 Period: $\frac{2\pi}{3}$
 Phase shift: Left $\frac{\pi}{6}$
 Vert. shift: Up 2
 Min: 0
 Max: 4

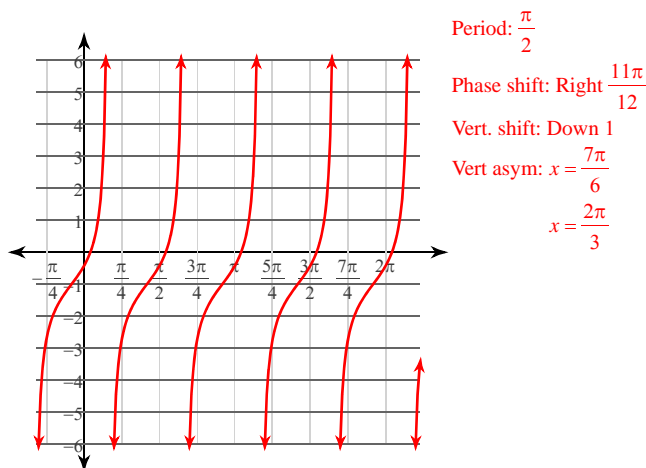
4) $y = \cos\left(\frac{\theta}{4} + \frac{\pi}{4}\right) - 2$



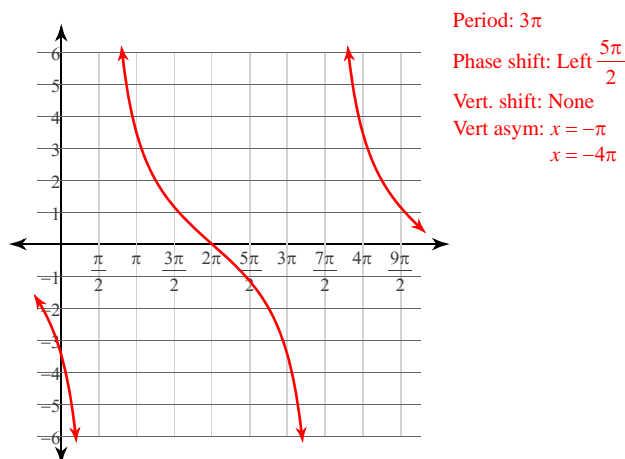
Amplitude: 1
 Period: 8π
 Phase shift: Left π
 Vert. shift: Down 2
 Min: -3
 Max: -1

Find the period in radians, the phase shift in radians, the vertical shift, and two vertical asymptotes (if any). Then sketch the graph using radians.

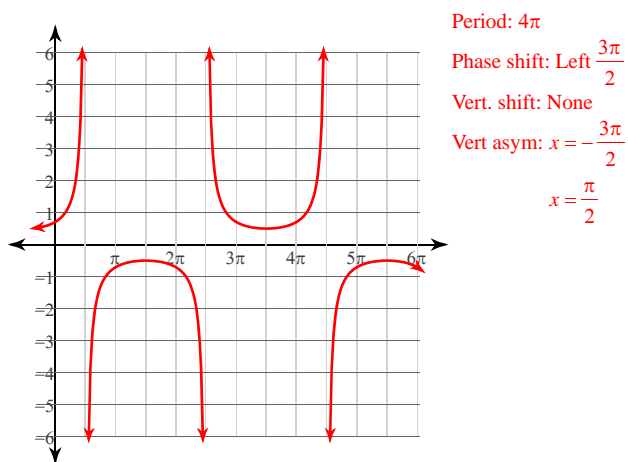
5) $y = \tan\left(2\theta - \frac{11\pi}{6}\right) - 1$



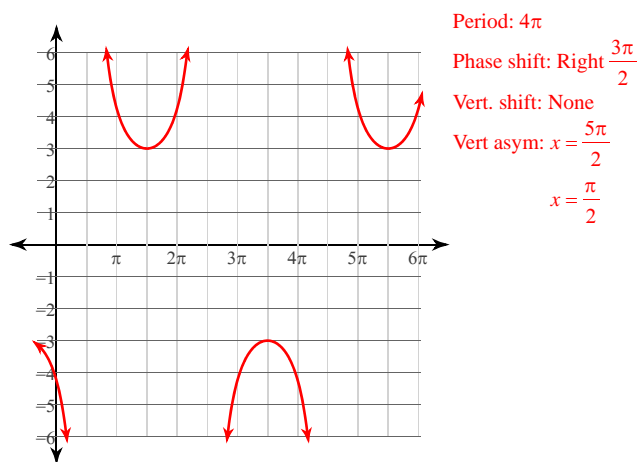
6) $y = 2\cot\left(\frac{\theta}{3} + \frac{5\pi}{6}\right)$



7) $y = \frac{1}{2} \cdot \csc\left(\frac{\theta}{2} + \frac{3\pi}{4}\right)$



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



Find the transformations required to obtain the graph starting with a basic trig function.

9) $y = 5\cos\left(\theta + \frac{5\pi}{6}\right)$ Starting with $\cos \theta$,
 vertically stretch by 5,
 translate left $\frac{5\pi}{6}$

10) $y = 5 + \sin\left(8\theta + \frac{3\pi}{4}\right)$ Starting with $\sin \theta$,
 horizontally shrink by $\frac{1}{8}$, translate left $\frac{3\pi}{32}$,
 translate up 5

11) $y = \sin\left(\theta - \frac{\pi}{6}\right) - 2$ Starting with $\sin \theta$,
 translate right $\frac{\pi}{6}$,
 translate down 2

12) $y = \frac{1}{10} \cdot \tan\left(\theta - \frac{\pi}{3}\right)$ Starting with $\tan \theta$,
 vertically shrink by $\frac{1}{10}$, translate right $\frac{\pi}{3}$