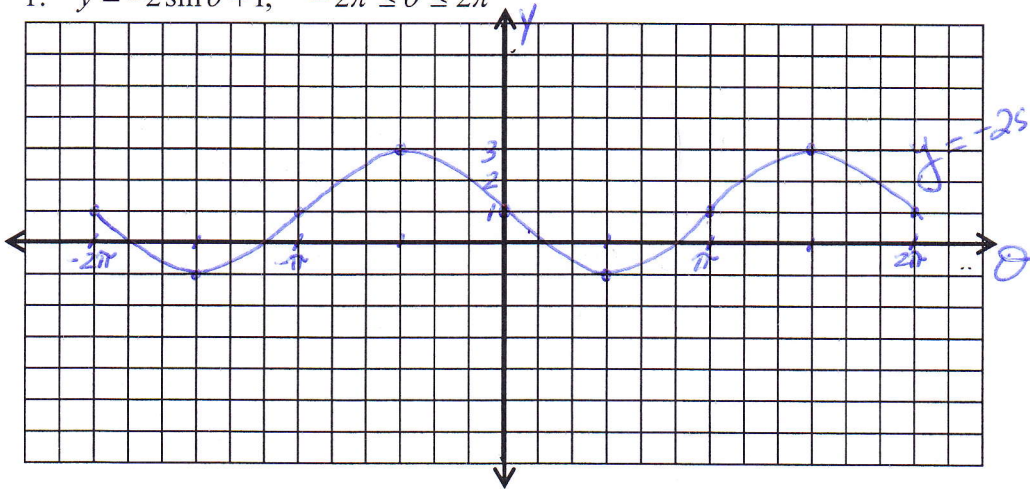


Solutions

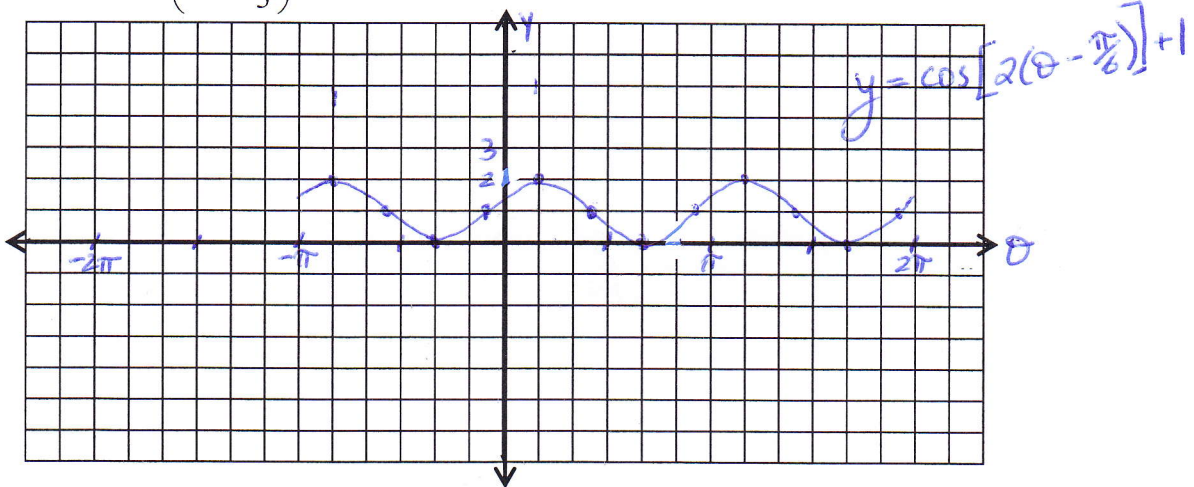
GRAPHS OF TRIGONOMETRIC FUNCTIONS

Graph each of the following trigonometric functions on the specified interval.

1. $y = -2\sin\theta + 1, \quad -2\pi \leq \theta \leq 2\pi$



2. $y = \cos\left(2\theta - \frac{\pi}{3}\right) + 1, \quad -\pi \leq \theta \leq 2\pi$

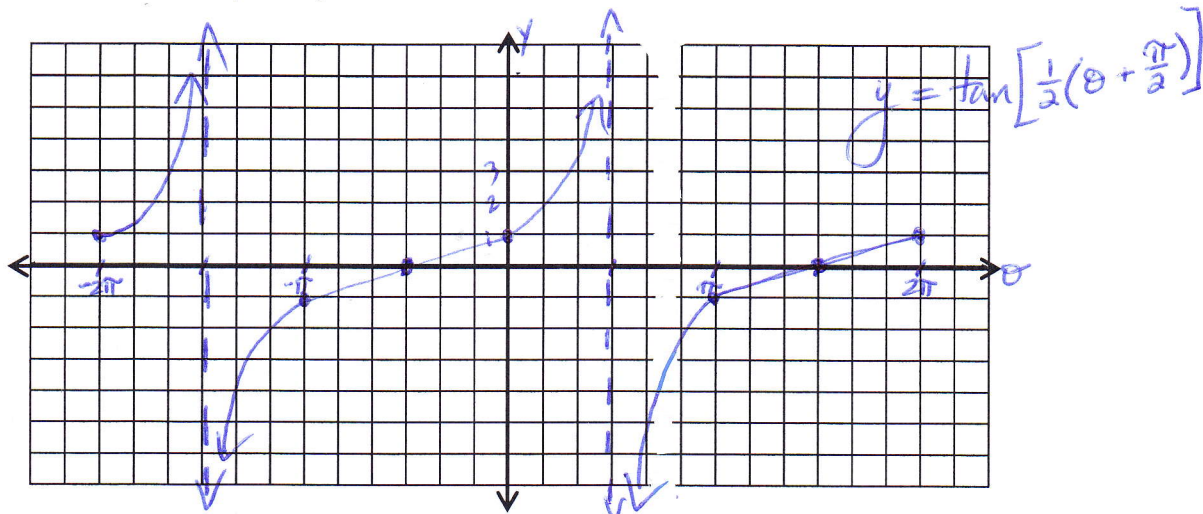


3. Determine the each of following for the graphs in #1 #2 and #3 if they were graphed for $-\infty < \theta < \infty$.

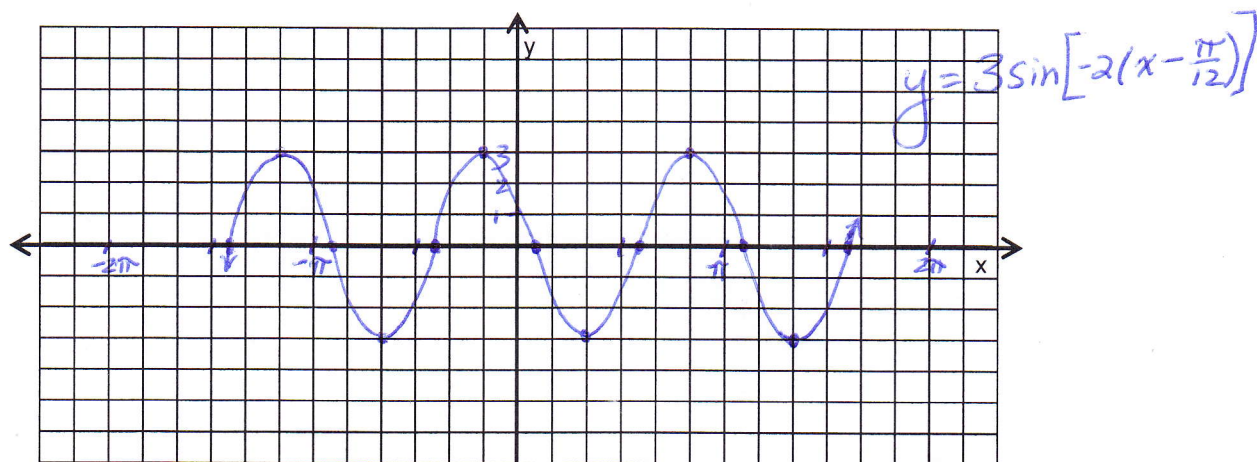
	$y = -2\sin\theta + 1$	$y = \cos\left(2\theta - \frac{\pi}{3}\right) + 1$	$y = \tan\left(\frac{\theta}{2} + \frac{\pi}{4}\right)$
a) Amplitude	2	1	N/A
b) Period	2π	π	2π
c) Phase Shift	N/A	$\frac{\pi}{6}$ right	$\frac{\pi}{2}$ left
d) Domain	$\{\theta \in \mathbb{R}\}$	$\{\theta \in \mathbb{R}\}$	$\{\theta \in \mathbb{R} \mid \theta \neq \frac{\pi}{2} + 2\pi n, n \in \mathbb{Z}\}$
f) x-intercepts	$\theta = \frac{\pi}{6} + 2\pi n, n \in \mathbb{Z}$ OR $\theta = \frac{5\pi}{6} + 2\pi n, n \in \mathbb{Z}$	$\theta = \frac{2\pi}{3} + \pi n, n \in \mathbb{Z}$	$\theta = \frac{3\pi}{2} + 2\pi n, n \in \mathbb{Z}$

Solve for zeros
 $0 = -2\sin\theta + 1$
 $\frac{1}{2} = \sin\theta$
 $\sin^{-1}\left(\frac{1}{2}\right) = \theta$
 $\theta = \frac{\pi}{6}, \frac{5\pi}{6}$

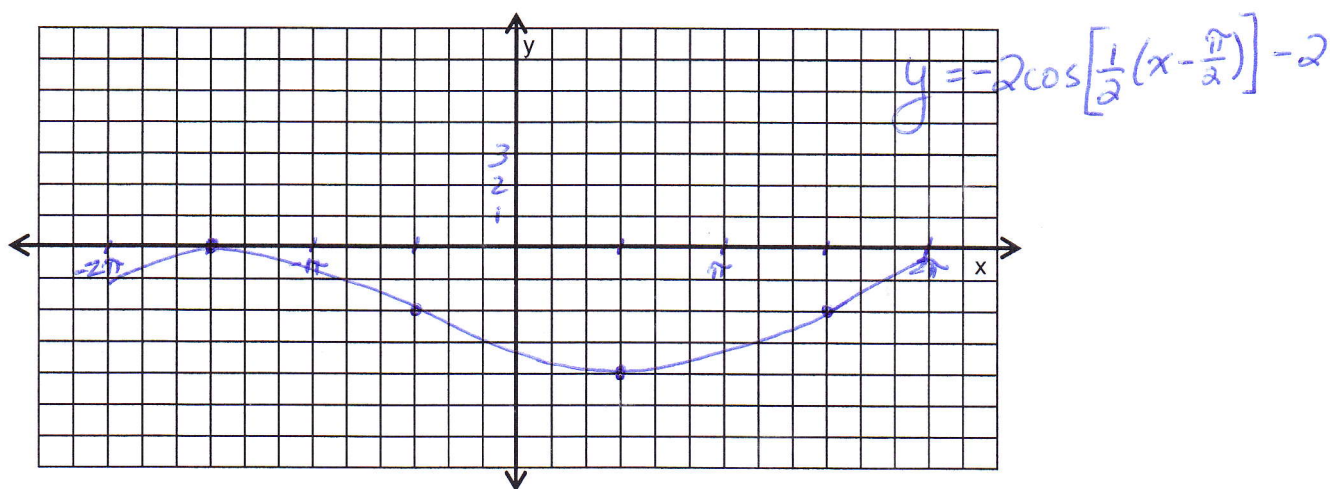
4. $y = \tan\left(\frac{\theta}{2} + \frac{\pi}{4}\right), \quad -2\pi \leq \theta \leq 2\pi$



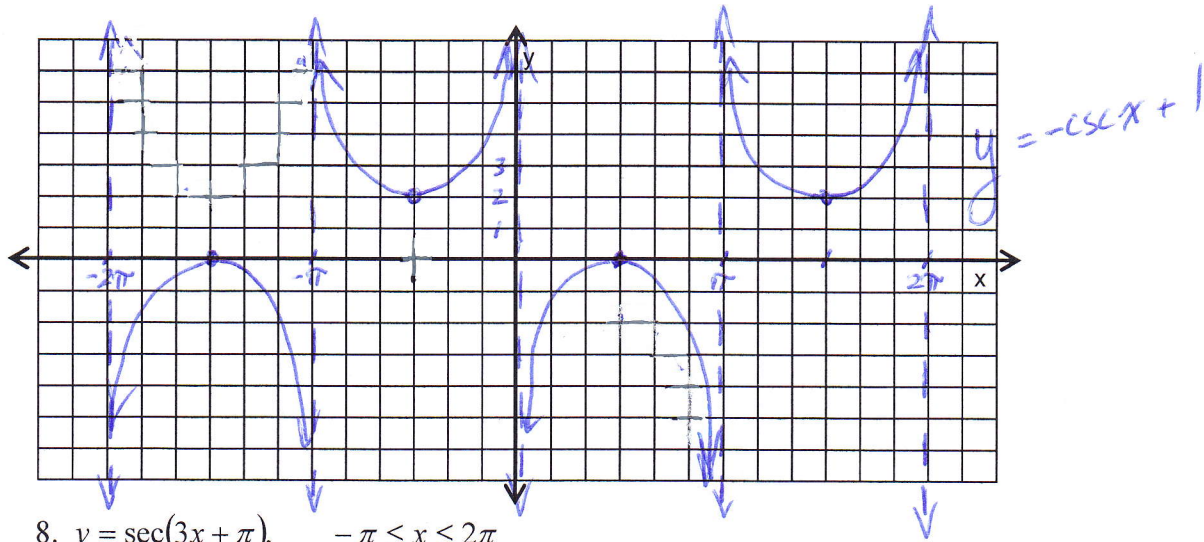
5. $y = 3\sin\left(\frac{\pi}{6} - 2x\right), \quad (\text{graph 3 periods})$



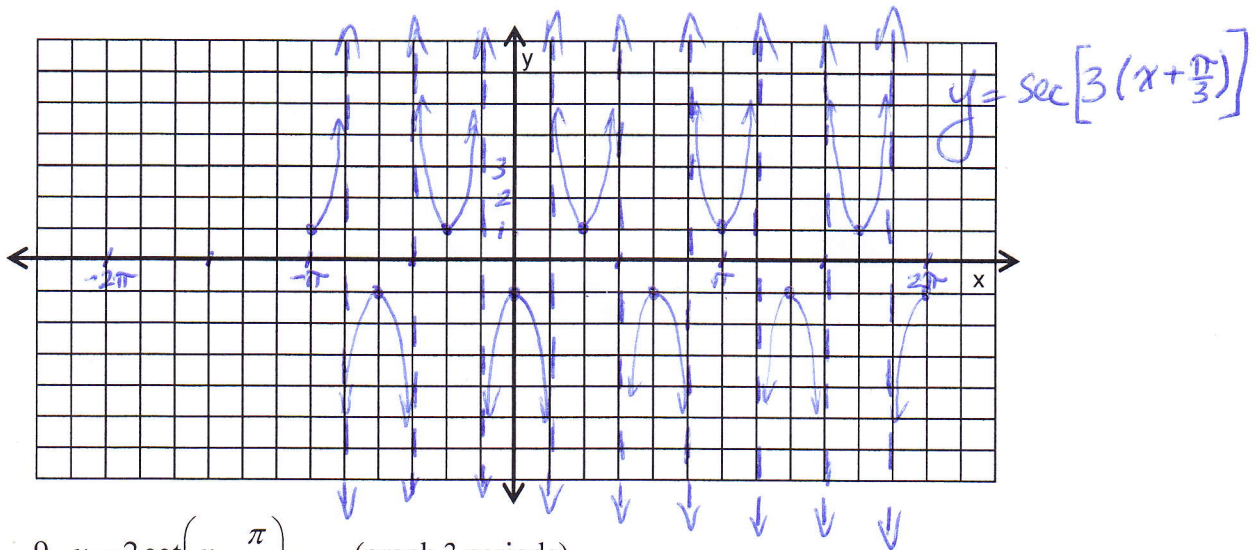
6. $y = -2\cos\left(\frac{x}{2} - \frac{\pi}{4}\right) - 2, \quad -2\pi \leq x \leq 2\pi$



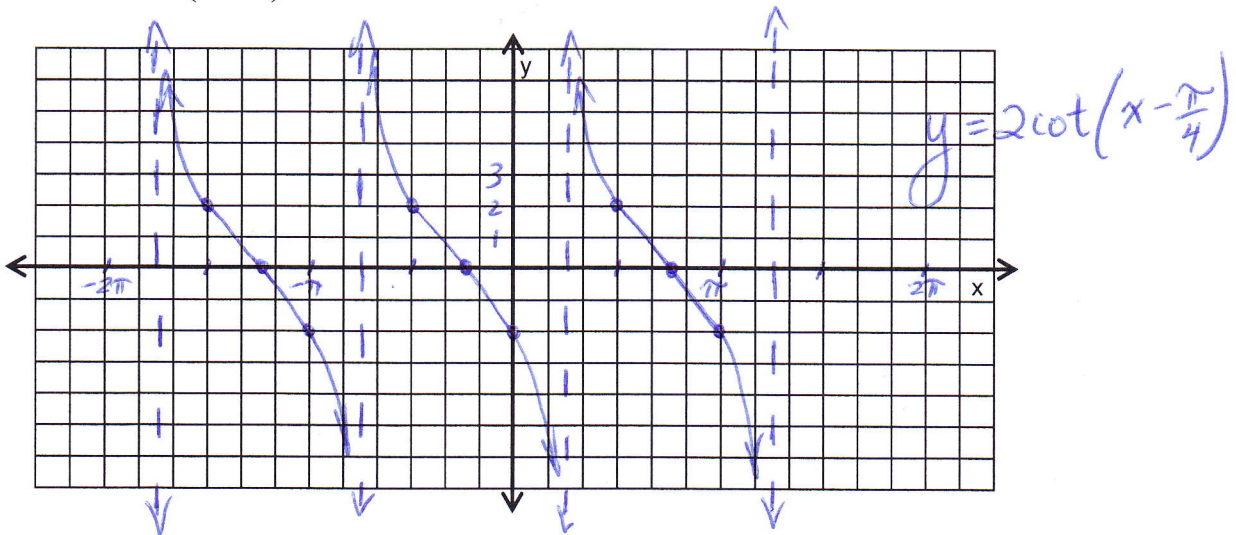
7. $y = -\csc x + 1$, (graph 2 periods)



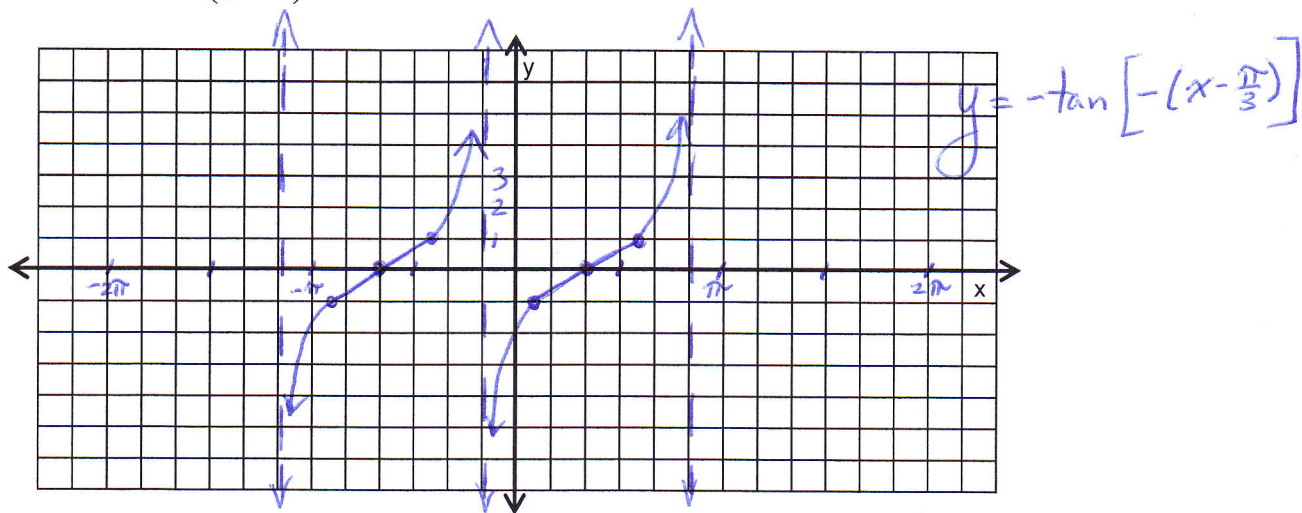
8. $y = \sec(3x + \pi)$, $-\pi \leq x \leq 2\pi$



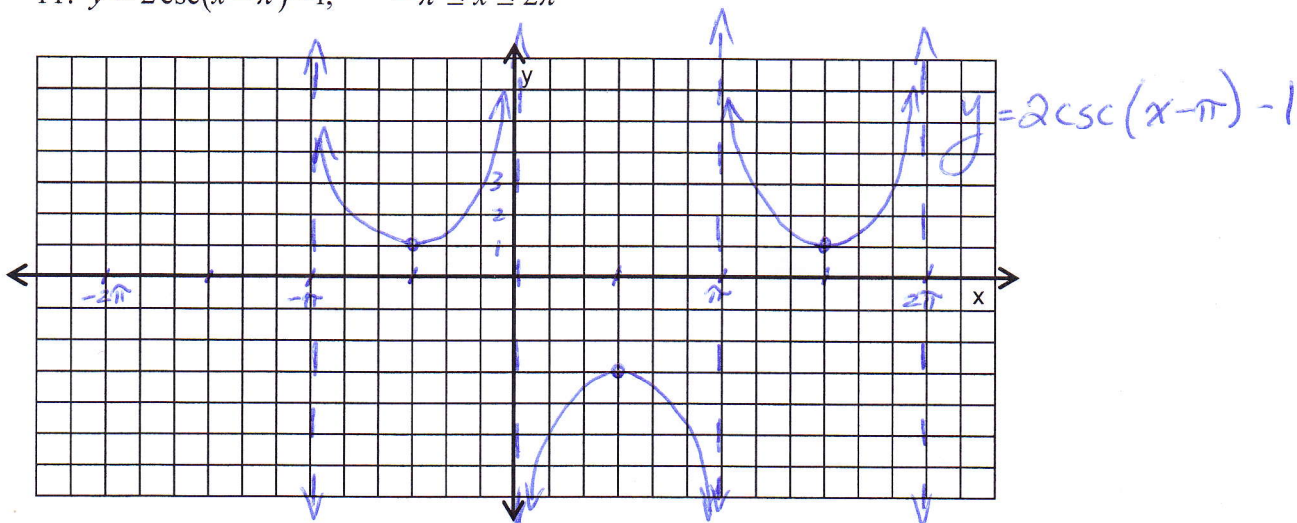
9. $y = 2 \cot(x - \frac{\pi}{4})$, (graph 3 periods)



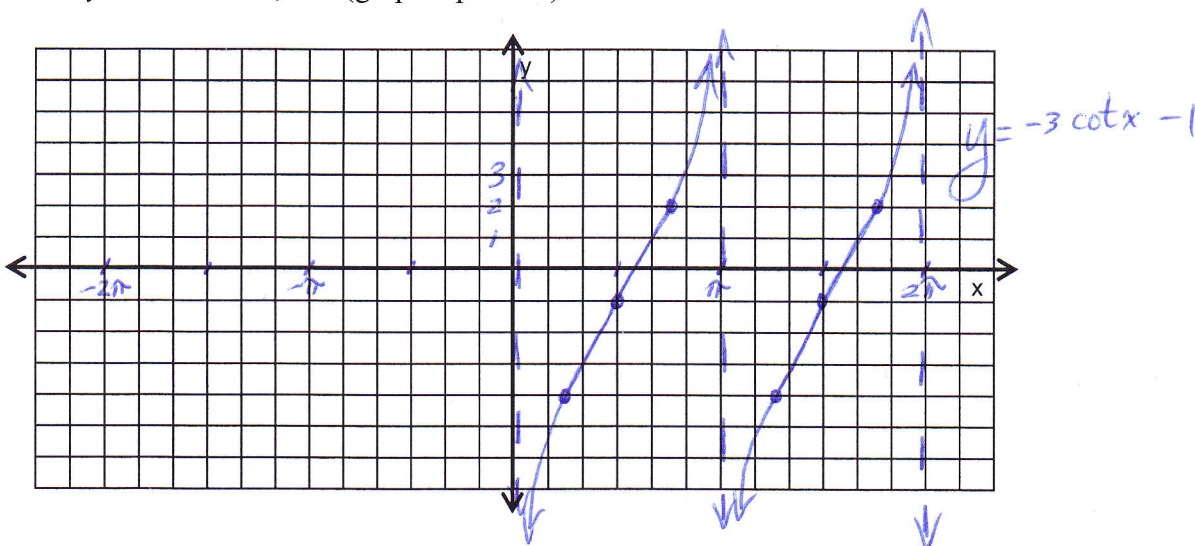
10. $y = -\tan\left(\frac{\pi}{3} - x\right)$, (graph 2 periods)



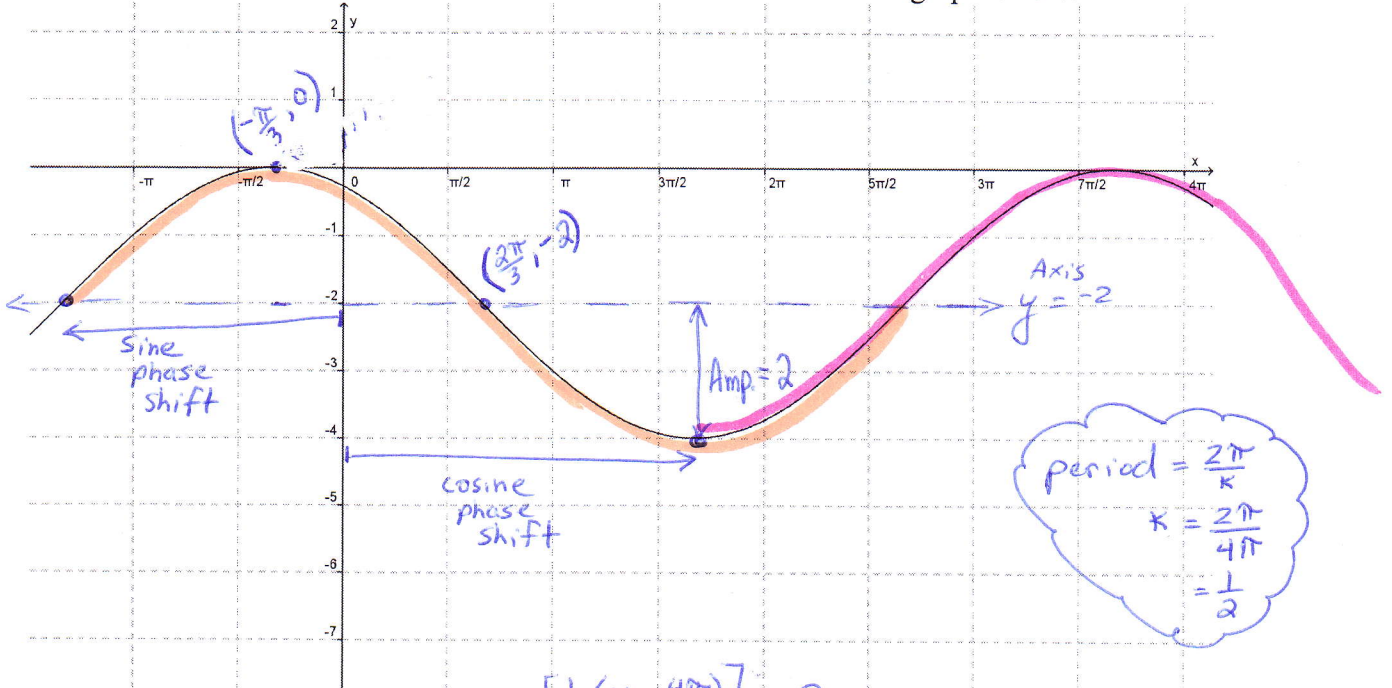
11. $y = 2\csc(x - \pi) - 1$, $-\pi \leq x \leq 2\pi$



12. $y = -3\cot x - 1$, (graph 2 periods)

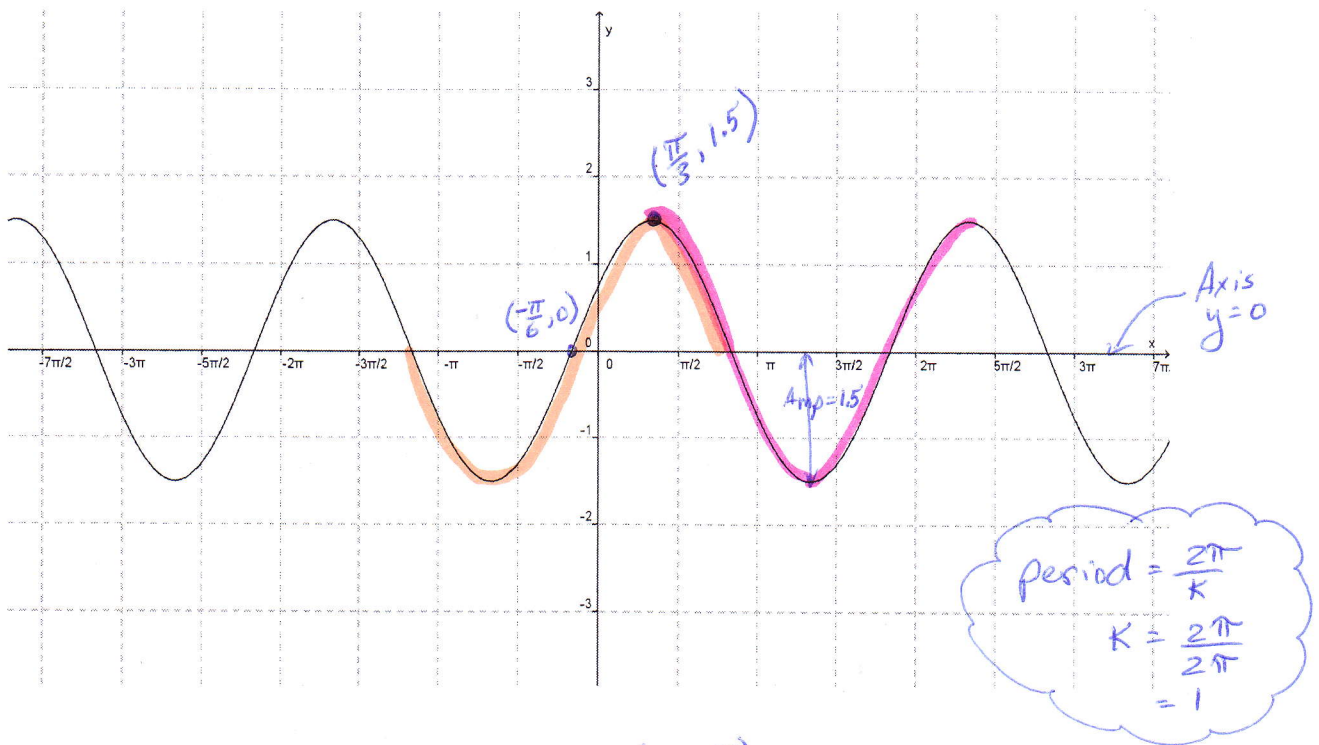


13. Determine a sine function and a reflected cosine function for the graph below.



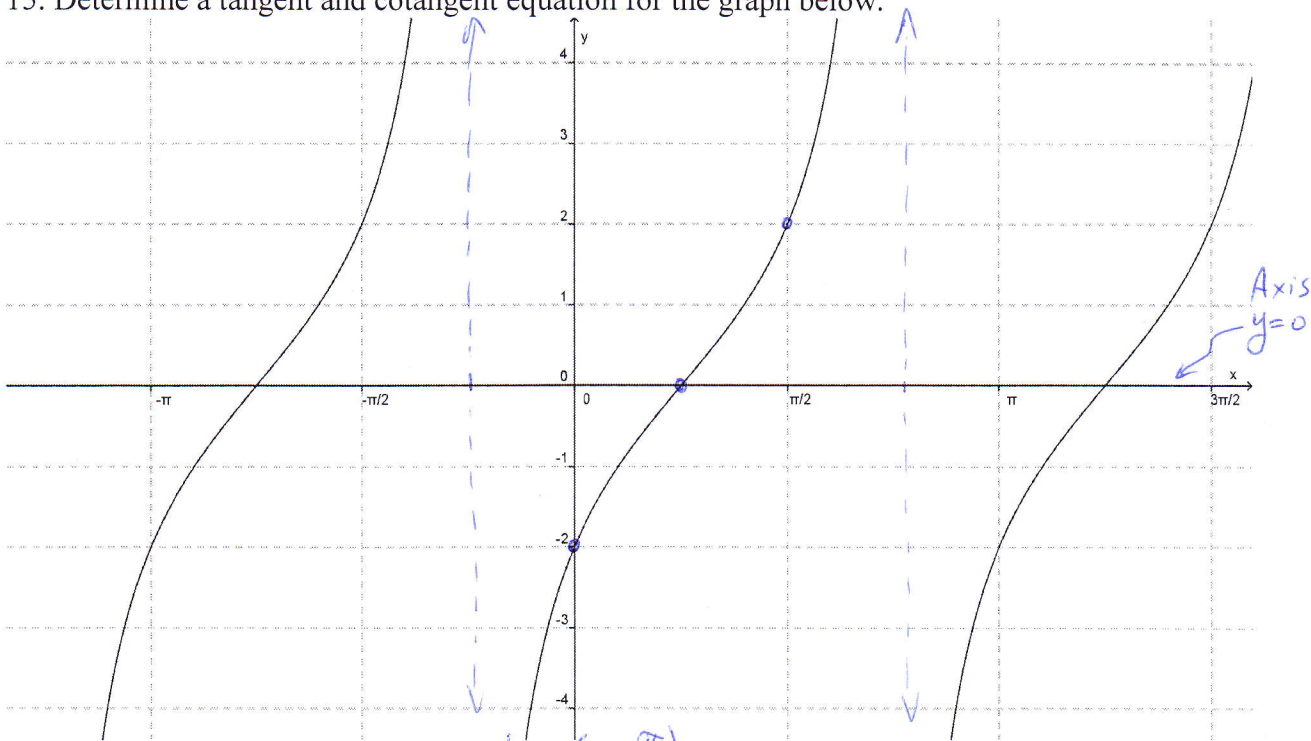
Sine Equation: $y = 2 \sin\left[\frac{1}{2}\left(x + \frac{4\pi}{3}\right)\right] - 2$
 Reflected Cosine Equation: $y = -2 \cos\left[\frac{1}{2}\left(x - \frac{5\pi}{6}\right)\right] - 2$

14. Determine a cosine function and a reflected sine function for the graph below.



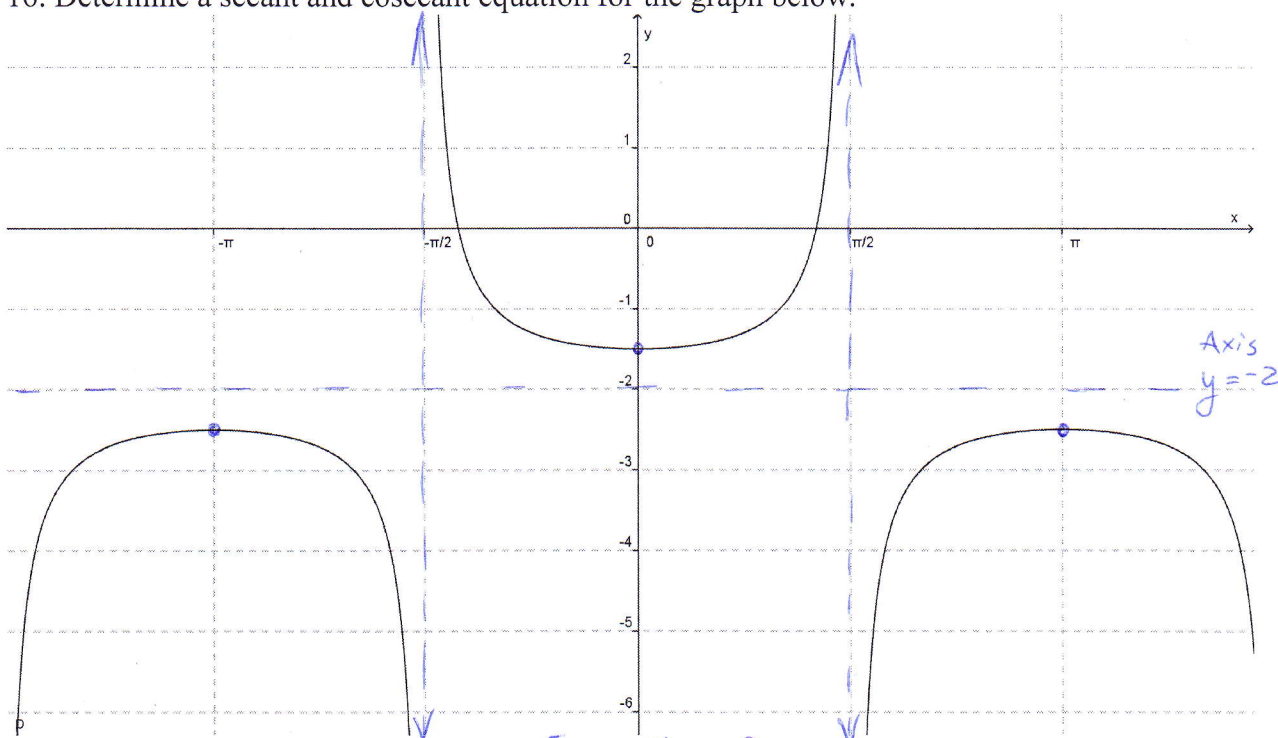
Cosine Equation: $y = 1.5 \cos\left(x - \frac{\pi}{3}\right)$
 Reflected Sine Equation: $y = -1.5 \sin\left(x + \frac{7\pi}{6}\right)$

15. Determine a tangent and cotangent equation for the graph below.



Tangent Equation: $y = 2 \tan(x - \frac{\pi}{4})$
 Cotangent Equation: $y = -2 \cot(x + \frac{\pi}{4})$

16. Determine a secant and cosecant equation for the graph below.



Secant Equation: $y = 0.5 \sec x - 2$
 Cosecant Equation: $y = 0.5 \csc(x + \frac{\pi}{2}) - 2$