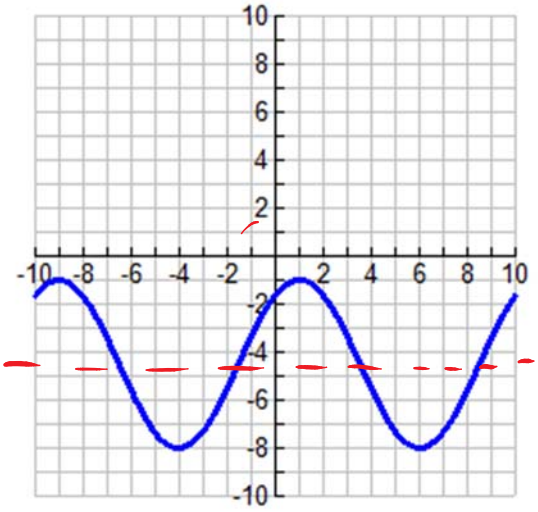
Algebra 2 Trig H Name:

6.5 Transformations Summary and Writing Equations

1. Write four different equations transforming sinΘ and cosΘ.



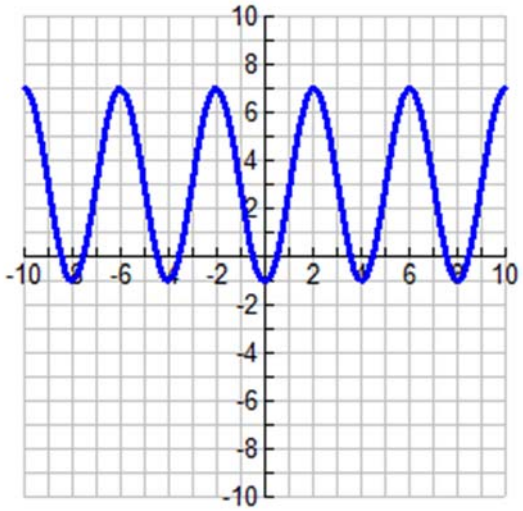
$y = 3.5\cos\left(\frac{\pi}{5}(x+9)\right) - 4.5$

$y = -3.5\cos\left(\frac{\pi}{5}(x+4)\right) - 4.5$

$y = 3.5\sin\left(\frac{\pi}{5}(x+1.5)\right) - 4.5$

$y = -3.5\sin\left(\frac{\pi}{5}(x+6.5)\right) - 4.5$

2. Write four different equations transforming sinΘ and cosΘ.



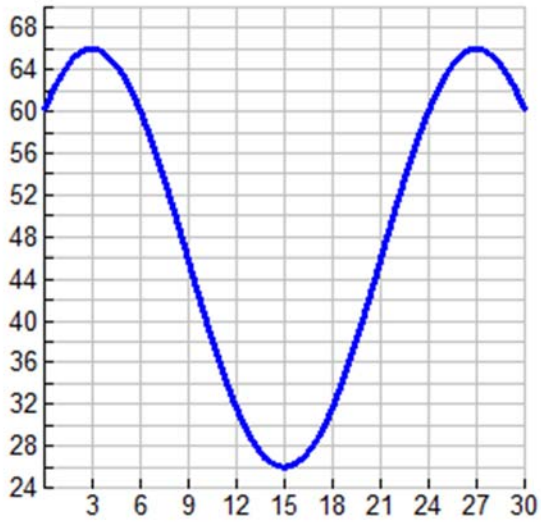
$y = 4\cos\left(\frac{\pi}{2}(x+2)\right) + 3$

$y = -4\cos\left(\frac{\pi}{2}(x)\right) + 3$

$y = 4\sin\left(\frac{\pi}{2}(x-1)\right) + 3$

$y = -4\sin\left(\frac{\pi}{2}(x-3)\right) + 3$

3. Write four different equations transforming sinΘ and cosΘ.



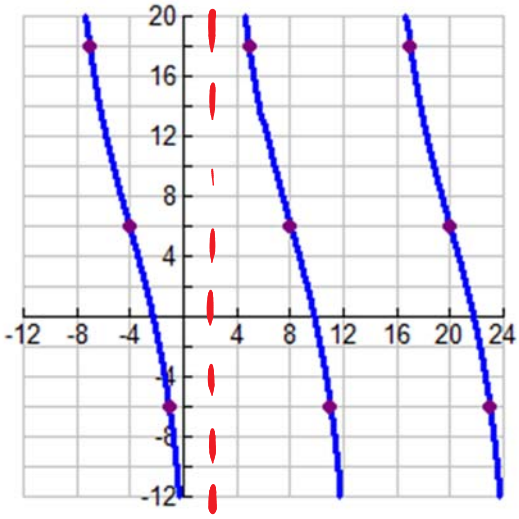
$y = 20\cos\left(\frac{\pi}{12}(x-3)\right) + 46$

$y = -20\cos\left(\frac{\pi}{12}(x-15)\right) + 46$

$y = 20\sin\left(\frac{\pi}{12}(x-21)\right) + 46$

$y = -20\sin\left(\frac{\pi}{12}(x-9)\right) + 46$

4. Write four different equations transforming tanΘ and cotΘ.



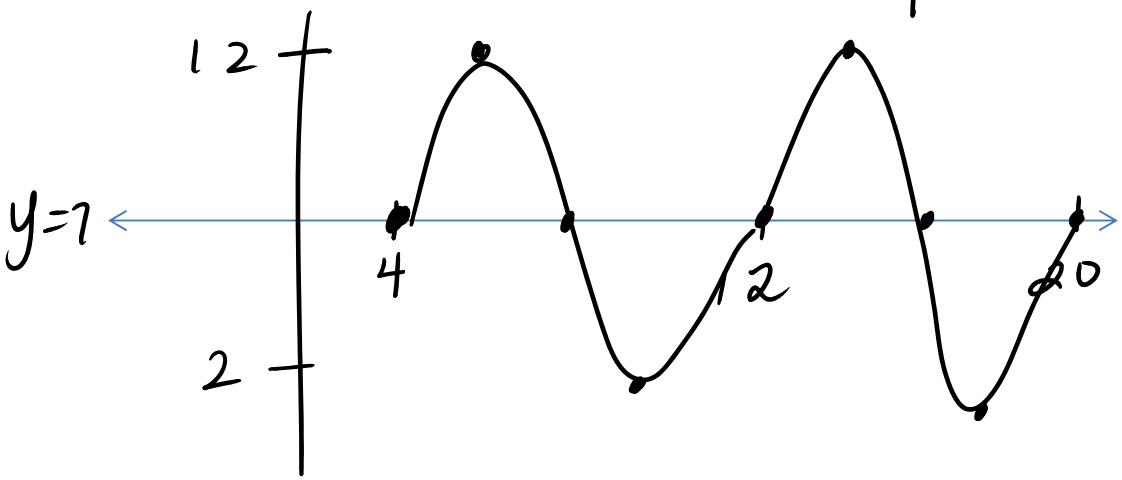
$y = 12\cot\left(\frac{\pi}{12}(x-2)\right)+6$

$y = 12\cot\left(\frac{\pi}{12}(x+10)\right)+6$

$y = -12\tan\left(\frac{\pi}{12}(x-8)\right)+6$

$y = -12\tan\left(\frac{\pi}{12}(x+4)\right)+6$

5. Graph two periods $y = 5\sin\left(\frac{\pi\theta}{4}-\pi\right)+7$ $= 5\sin\left(\frac{\pi}{4}(\theta-4)\right)+7$



Amplitude: 5

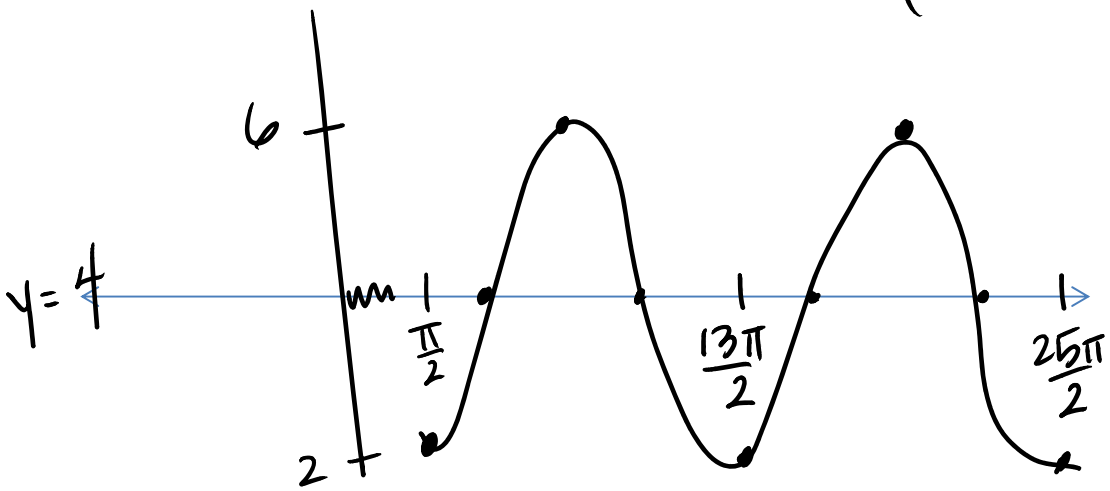
Sinusoidal axis: $y=7$

Period: $2\pi\cdot\frac{4}{\pi}=8$

Phase shift: 4

End critical point: 12

6. Graph two periods $y = -2\cos\left(\frac{\theta}{3}-\frac{\pi}{6}\right)+4$ $= -2\cos\left(\frac{1}{3}(\theta-\frac{\pi}{2})\right)+4$



Amplitude: 2

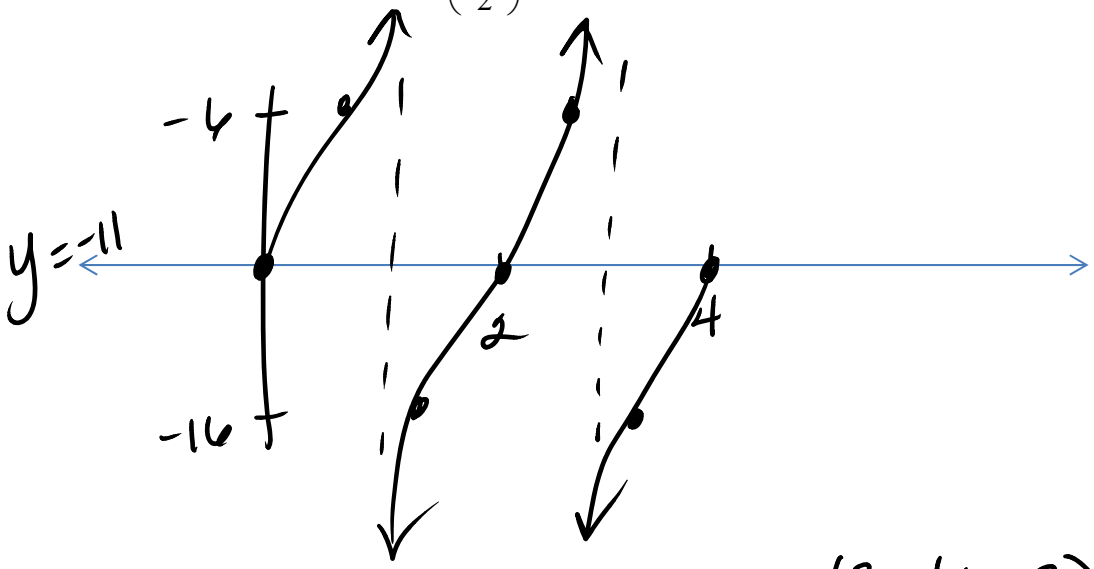
Sinusoidal axis: $y=4$

Period: $2\pi\cdot 3 = 6\pi$

Phase shift: $\frac{\pi}{2}$

End critical point: $\frac{13\pi}{2}$

7. Graph two periods $y = 5\tan\left(\frac{\pi\theta}{2}\right) - 11$



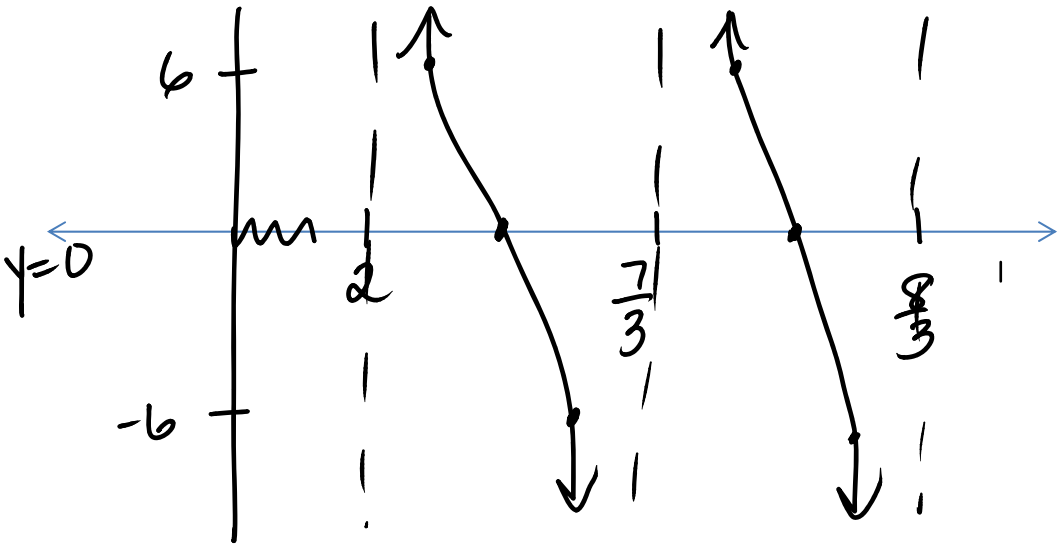
Midline: $y = -11$

Period: $\pi \cdot \frac{2}{\pi} = 2$

Phase shift: none

End critical point: 2

8. Graph two periods $y = 6\cot(3\pi\theta - 6\pi)$ $= 6\cot(3\pi(\theta - 2))$



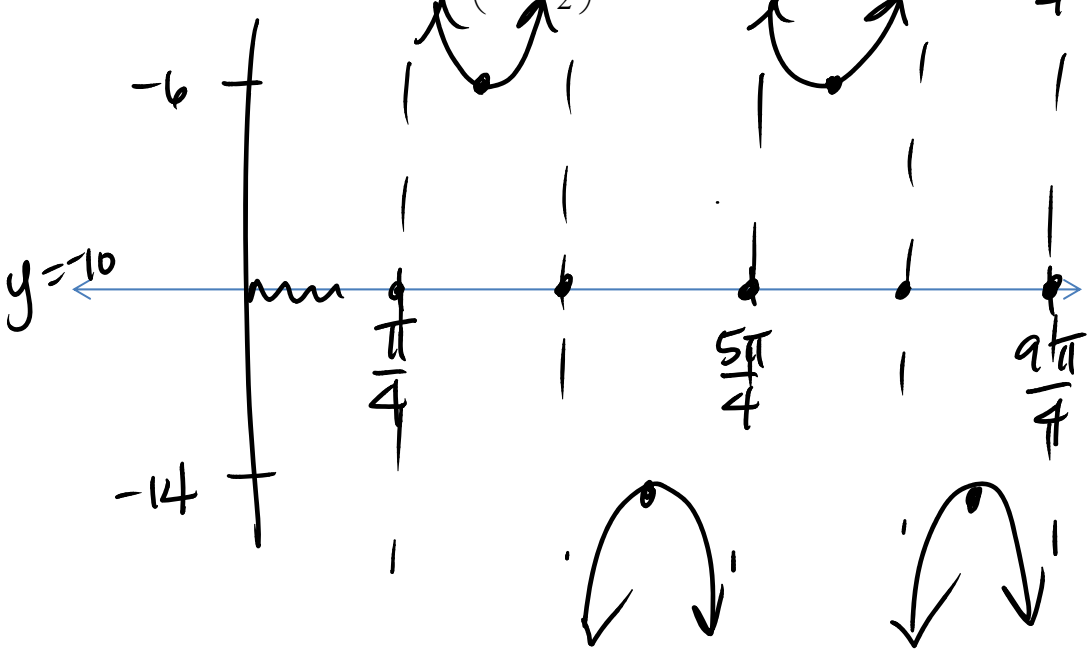
Midline: $y = 0$

Period: $\frac{\pi}{3\pi} = \frac{1}{3}$

Phase shift: 2

End critical point: $\frac{7}{3}$

9. Graph two periods $y = 4\csc\left(2\theta - \frac{\pi}{2}\right) - 10$ $= 4\csc(2(\theta - \frac{\pi}{4})) - 10$



Amplitude: 4 for sin

Sinusoidal axis: $y = -10$

Period: $\frac{2\pi}{2} = \pi$

Phase shift: $\frac{\pi}{4}$

End critical point: $\frac{5\pi}{4}$