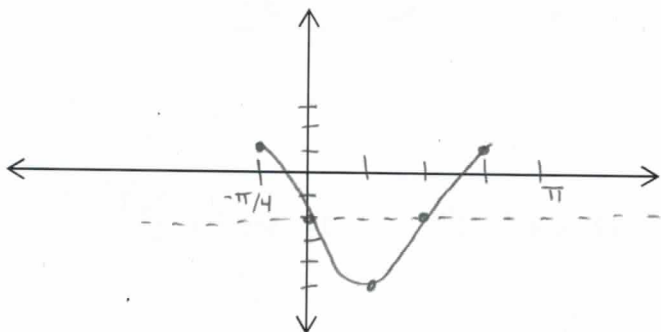
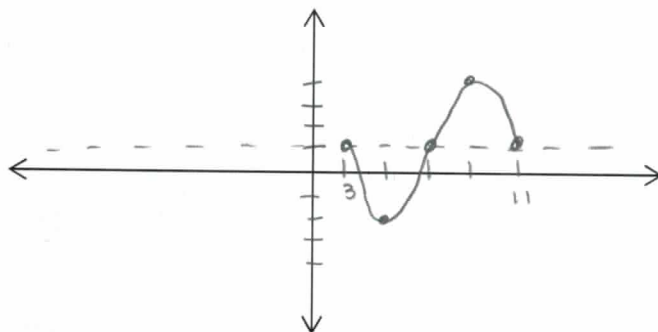


Graph the following functions, showing all critical values for one full cycle. Clearly label your axes.

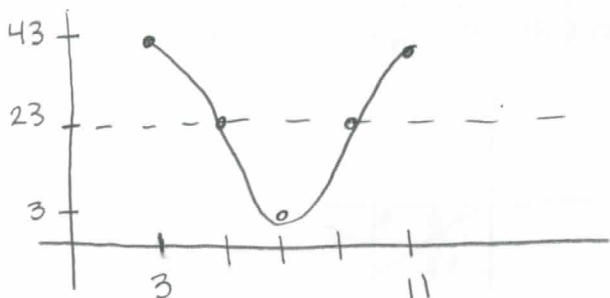
1.  $y = -2 + 3\cos 2\left(x + \frac{\pi}{4}\right)$   $\downarrow 2 \leftarrow \frac{\pi}{4}$  Per.  $\pi$   
amp 3



2.  $y = 1 - 3\sin \frac{\pi}{4}(x - 3)$   $\uparrow 1 \rightarrow 3$  per. 8  
amp 3

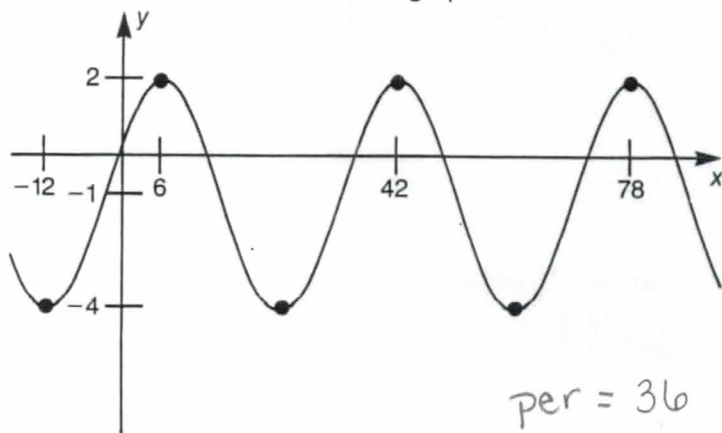


3. As you ride the Ferris Wheel at Navy Pier, your distance from the ground varies sinusoidally with time. You find that it takes 3 seconds to reach the top, 43 feet above the ground, and that the Ferris Wheel makes a revolution once every 8 seconds. The diameter of the wheel is 40 feet. Write the particular equation.



$$y = 23 + 20\cos \frac{\pi}{4}(x - 3)$$

4. Write a cosine equation for the graph below.



$$y = -1 + 3\cos \frac{\pi}{18}(x - 6)$$

Find the exact value for the following:

5.  $\cos^{-1}\left(-\frac{1}{2}\right)$

$\frac{2\pi}{3}$

6.  $\arcsin(-1)$

$-\frac{\pi}{2}$

7.  $\tan^{-1}(-\sqrt{3})$

$-\frac{\pi}{3}$

8.  $\sin^{-1}\left(\frac{1}{2}\right)$

$\frac{\pi}{6}$

9.  $\sec^{-1}(2)$

$\frac{\pi}{3}$

10.  $\operatorname{arccsc} 1$

$\frac{\pi}{2}$

11.  $\cot^{-1}(-\sqrt{3})$

$\frac{5\pi}{6}$

12.  $\cos^{-1}(-2)$

undefined

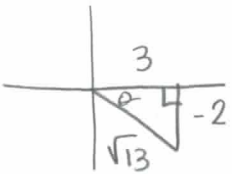
13.  $\cot^{-1}(-1)$

$\frac{3\pi}{4}$

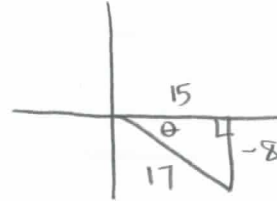
14.  $\sec^{-1}\left(\frac{-2\sqrt{3}}{3}\right)$

$\frac{5\pi}{6}$

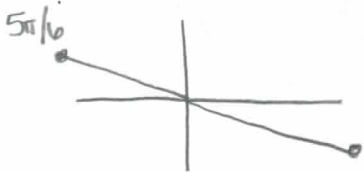
15.  $\cos\left(\operatorname{Arc} \tan\left(-\frac{2}{3}\right)\right) = \frac{3}{\sqrt{13}}$



16.  $\cos\left(\operatorname{Arc} \sin\left(-\frac{8}{17}\right)\right) = \frac{15}{17}$



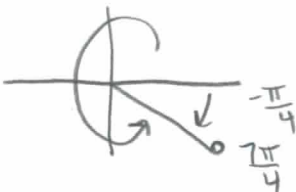
17.  $\operatorname{Arc} \tan\left(\tan\left(\frac{5\pi}{6}\right)\right) = -\frac{\pi}{6}$



18.  $\tan\left(\operatorname{Cos}^{-1}\left(-\frac{1}{2}\right)\right) = -\sqrt{3}$

$\tan\left(\frac{2\pi}{3}\right)$

19.  $\operatorname{Arc} \sin\left(\sin\left(\frac{7\pi}{4}\right)\right) = -\frac{\pi}{4}$



20.  $\sin^{-1}(\cos 18^\circ) = 72^\circ$

