Ex. 1

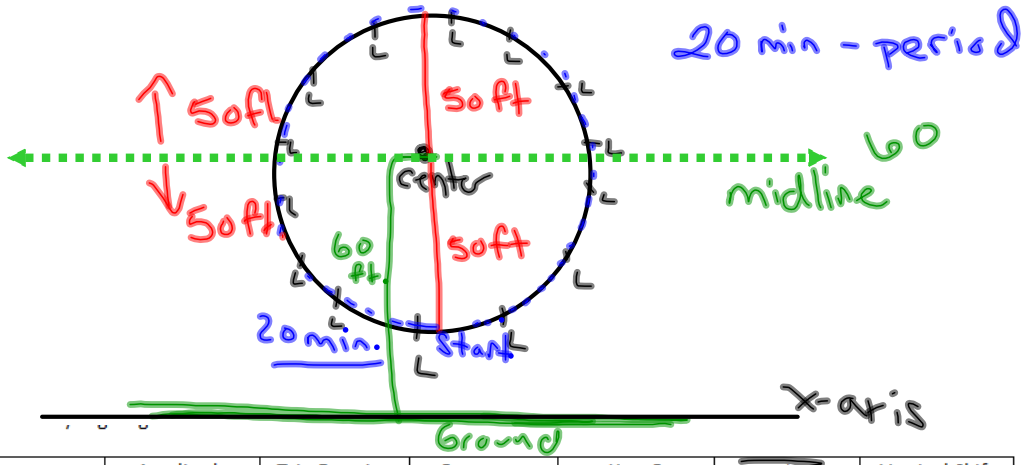
Kiki and Mikey are riding on a ferris wheel at a local carnival. The circular ferris wheel has a radius of 50 feet and is located 60 feet from the ground level. The ferris wheel makes a full rotation every 20 minutes. As a function relating the height of Kiki and Mikey on the ferris wheel to the time they ride (in minutes), find the following:

a) the amplitude of the seat. 50 ft.

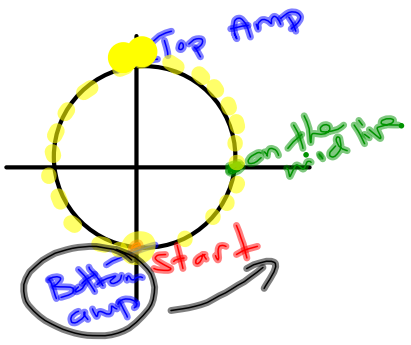
b) the period of the seat 20 min.

c) the equilibrium of the ride. midline 60 ft.

d) an equation modeling the data presented.



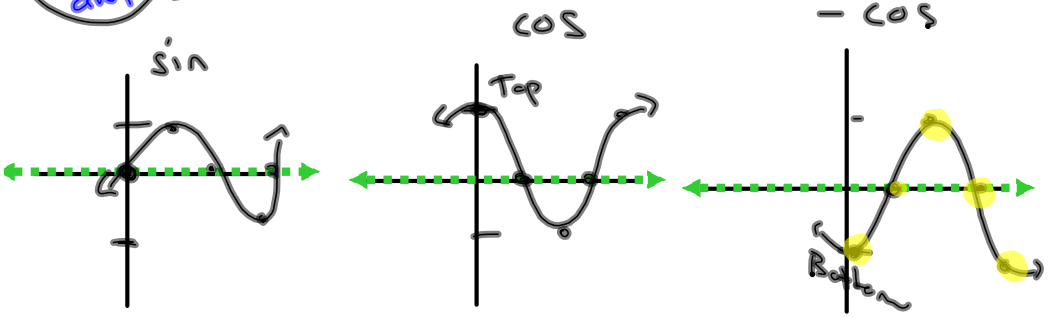
	Amplitude	Trig Function	Omega, ω	X or Θ	Φ	Vertical Shift
Y=	50	−cos	π/10	Θ		60
	(Distance from Midline)	sin or cos	$\omega=\frac{2\pi}{Pd}$	(VARIABLE)	Φ= -(PS)(ω)	(MIDLINE)

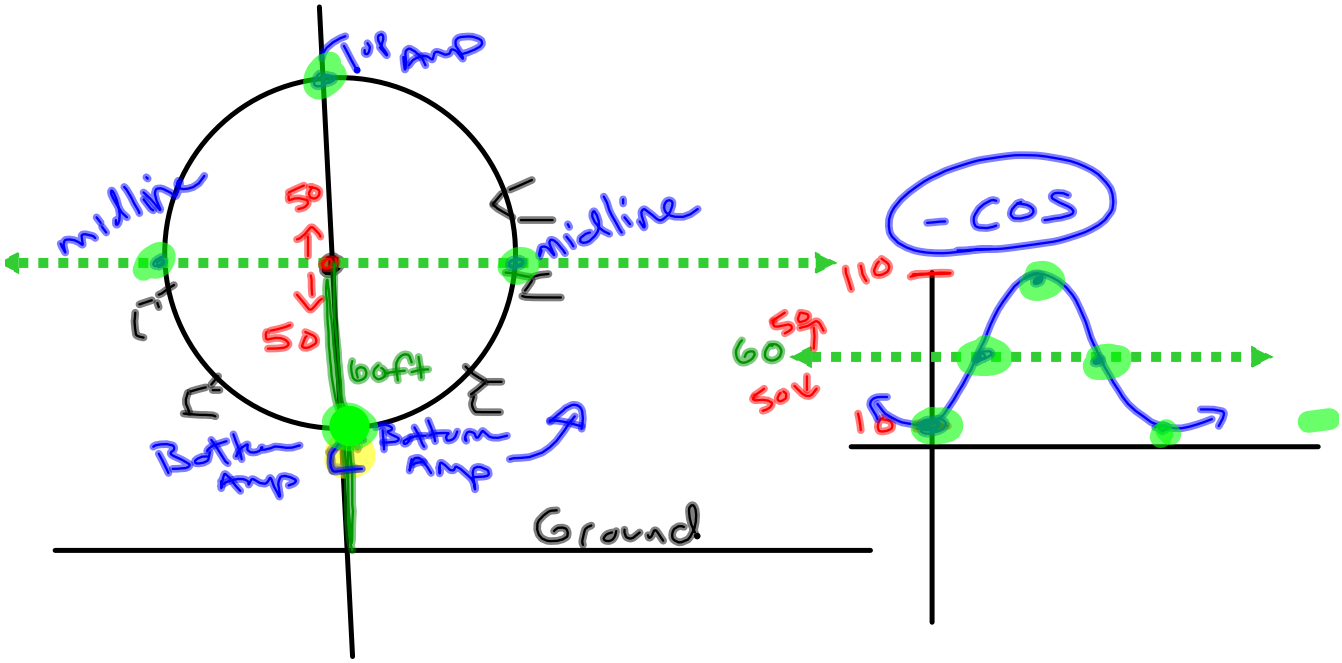


$\omega = \frac{2\pi}{Pd}$ - 20 min.

$\omega = \frac{2\pi}{20}$ $y = -50\cos\left(\frac{\pi}{10}\Theta\right) + 60$

$= \frac{\pi}{10}$

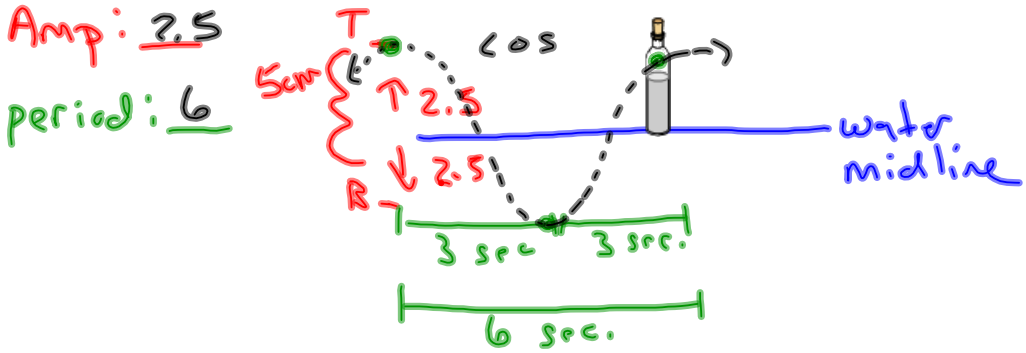



Top Amp
midline
midline
50
50
60ft
Bottom Amp
Bottom Amp
Ground
- cos
110
60
50
50
10

Example 2:

An evil litterer tosses a half-full (or half-empty) bottle of water into the sea. As the water moves the bottle bobs up and down. The distance between its highest and lowest point is 5 cm. It moves from the highest to the lowest point in 3 seconds and then back to the highest point 3 seconds later and so on.

Write a cos function that models the movement of the littered bottle in relationship to the equilibrium point.



	Amplitude	Trig Function	Omega, ω	X or Θ	Φ	Vertical Shift
Y=	2.5	cos	$\pi/3$	Θ		
	(Distance from Midline)	sin or cos	$\omega=\frac{2\pi}{Pd}$	(VARIABLE)	Φ= -(PS)(ω)	(MIDLINE)

$\frac{2\pi}{6}$

$\omega = \frac{2\pi}{6}$

$\omega = \pi/3$

$y = 2.5\cos\left(\frac{\pi}{3}\theta\right)$

Example 3:

Write a sine function which models the oscillation of tides in KEY WEST, Florida if the equilibrium point is 7.8 feet, the amplitude is 5.5 feet, the phase shift is -2.0 hours, and the period is 12.4 hours. According to your model, find the average position of the tides after 7 hours.