

3. A carnival has a Ferris wheel that is 60 feet in diameter with 12 passenger cars. When viewed from the side where passengers board, the Ferris wheel rotates counterclockwise and makes 2 full turns each minute. Riders board the Ferris wheel from a platform that is 10 feet above the ground. We will use what we have learned about periodic functions to model the position of the passenger cars from different mathematical perspectives.

Write an equation for the HEIGHT of the passengers over time?

Period: 1 turn in $\frac{1}{2}$ minute

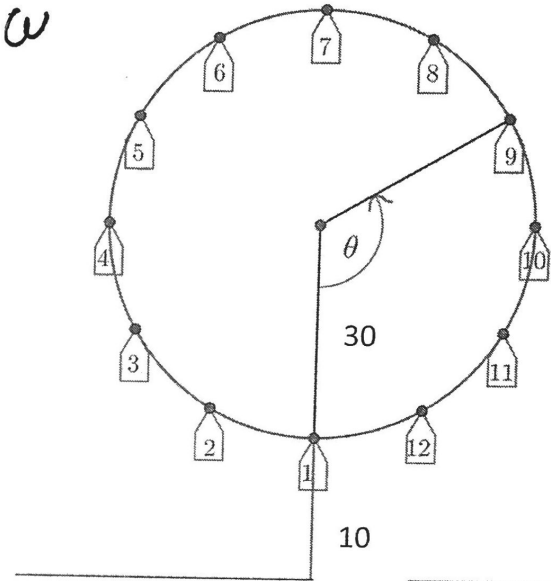
$$\frac{2\pi}{\frac{1}{2}} = 4\pi = \omega$$

$$h(t) = -30 \cos(4\pi t) + 40$$

Start at bottom

What is the highest a rider will ever get above the ground?

70 ft.



1. Use what you know about function transformations to sketch a graph of $y = g(x)$ for each function g on the interval $(0, 2\pi)$. I MUST SEE AT LEAST THREE CORRECT POINTS AND THE VERTICAL ASYMPTOTES LABELED!

a. $g(x) = \tan(2x) + 1$ up! \downarrow not 2π

Period for tangent: $\frac{\pi}{2}$

So...

Asymptotes: $\frac{\pi}{4} + \frac{\pi}{2}n, n \in \mathbb{Z}$

