

Solving Problems Using Sinusoidal Models

Example 1: A group of students is tracking a friend, John, who is riding a Ferris wheel. They know that John reaches the maximum height of 11 m at 10 s and then reaches the minimum height of 1 m at 55 s. How can you develop the equation of a sinusoidal function that models John's height above the ground to determine his height at 78 s?

Example 2: The top of a flagpole sways back and forth in high winds. The top sways 10 cm to the right (+10 cm) and 10 cm to the left (-10 cm) of its resting position and moves back and forth 240 times every minute. At $t = 0$, the pole was momentarily at its resting position. Then it started moving to the right. Determine the equation of a sinusoidal function that describes the distance the top of the pole is from its resting position in terms of time.