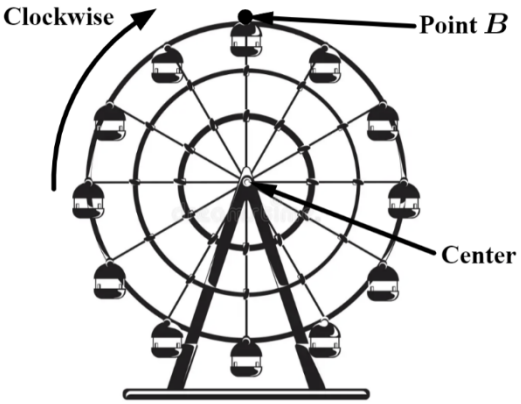


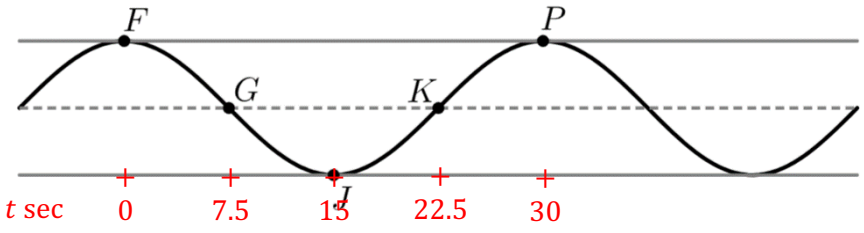
Note: Figure NOT drawn to scale

1. A Ferris Wheel rotates in a clockwise direction and completes one rotation every 30 seconds. Point B is on the top of one of the enclosed carriers and is located directly above the center of the Ferris Wheel at time $t = 0$ seconds, as indicated in the figure. Point B is 40 feet from the center of the Ferris Wheel. The center of the Ferris Wheel is 50 feet above the ground on which the Ferris Wheel sits. As the Ferris Wheel rotates at a constant speed, the distance between B and the ground periodically decreases and increases.

The periodic function h models the distance between point B and the ground, in feet, as a function of time t in seconds.

(A) The graph of h and its dashed midline for two full cycles is shown. Five points, $F, G, J, K,$ and P are labeled on the graph. No scale is indicated, and no axes are presented.

Determine possible coordinates $\left(t, h(t)\right)$ for the five points: $F, G, J, K,$ and P.



F: (0,90)
G: (7.5,50)
J: (15,10)
K: (22.5,50)
P: (30,90)

At time $t = 0$ seconds, B is located at the furthest from the ground, 90 feet from the ground, so one rotation later, at $t = 30$ seconds, the point B is 90 feet from the ground.

(B) Refer to the graph of h in part (A). The t-coordinate of K is t_1, and the t-coordinate of P is t_2.

(j) On the interval $\left(t_1, t_2\right)$, which of the following is true about h?

a. h is positive and increasing.

b. h is positive and decreasing.

c. h is negative and increasing.

d. h is negative and decreasing.

(ii) On the interval $\left(t_1, t_2\right)$. Decribe the concavity of the graph of h and determine whether the rate of change of h is increasing or decreasing.
The rate of change of h is decreasing because the graph of h is concave down on the interval (t_1, t_2)