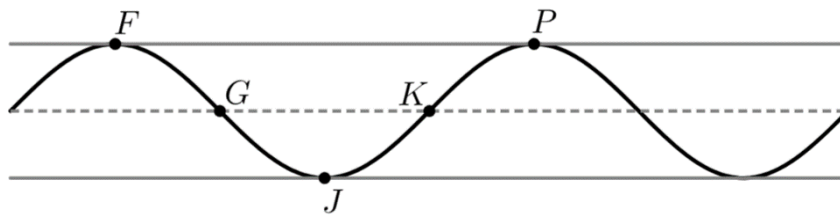


1. The figure shows a merry-go-round on level ground with fence to its right. The merry-go-round rotates in a counterclockwise direction and completes one rotation every 3 seconds. Point B is on the edge of the merry-go-round and is located at the furthest part of the merry-go-round from the fence at time $t = 0$ seconds, as indicated in the figure. Point B is 4 feet from the center of the merry-go-round. The center of the merry-go-round is 10 feet from the fence. As the merry-go-round rotates at a constant speed, the distance between B and the fence periodically decreases and increases.

The periodic function h models the distance between point B and the fence, 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 $(t, h(t))$ for the five points: F , G , J , K , and P .



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

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

- h is positive and increasing.
- h is positive and decreasing.
- h is negative and increasing.
- h is negative and decreasing.

(ii) Describe how the rate of change of h is changing over the interval (t_1, t_2) .