7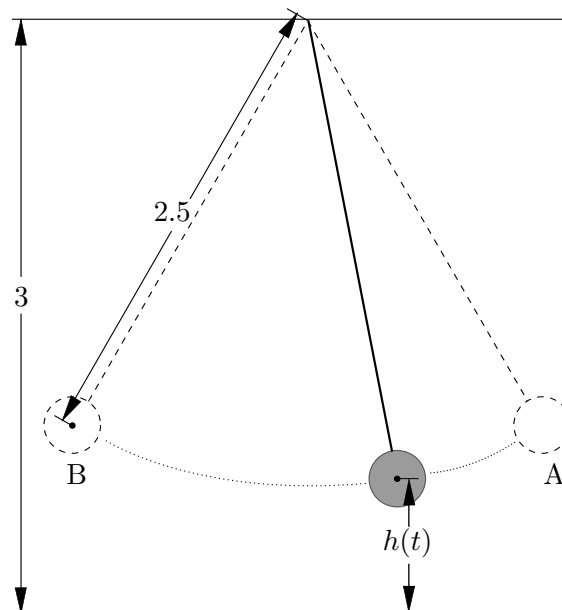. [8 points] The pendulum drawn below is a sphere that is hung from the ceiling by a piece of string that is 2.5 meters long. The ceiling is 3 meters above the floor, and the pendulum is swinging in between the points A and B as shown in the picture below.

Let $H = h(t)$ be the distance (in meters) between the center of the pendulum and the ground at time t (in seconds). Suppose that the function h is periodic, and that the midline of h is the line $H = 1$.

a. [2 points] If it takes two seconds for the pendulum to move from A to B (and also from to B to A), what is the period of the function h?

> *Solution:* Period of h= 2 seconds.

b. [2 points] What is the minimum value of the function h?

> *Solution:* Minimum value of $h = 3 - 2.5 = 0.5$ m.

c. [2 points] What is the amplitude of h?

> *Solution:* Amplitude of $h = 1 - 0.5 = 0.5$ m.

d. [2 points] What is the maximum value of the function h?

> *Solution:* Maximum value of $h = 1 + 0.5 = 1.5$ m.