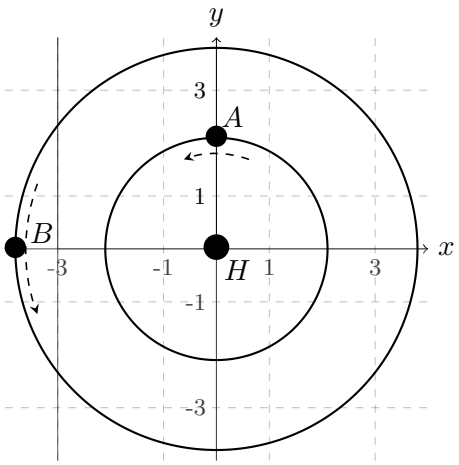
3. [10 points] Horatio the Daring is performing a dangerous stunt. Helicopter A and Helicopter B are circling around Horatio to film the event. Let t be the amount of time, in minutes, since the start of Horatio's stunt.

A top-down view of the flight paths is shown at right. The locations of the helicopters at $t = 0$ are labeled A and B, respectively, and Horatio's location is labeled H (at the origin).

All distances are measured in kilometers (km). The helicopters are flying counter-clockwise around Horatio in perfect circles at a constant height above the ground.



a. [4 points] Helicopter A moves at a constant speed of 0.7 km/min around a circle of radius 2.1 km. Write a formula for the function $a(t)$ that gives the y-coordinate of Helicopter A at time t.

Answer: $a(t) =$ _____

b. [6 points] The x-coordinate of Helicopter B at time t is given by the formula

$$b(t) = -3.8 \cos\left(\frac{\pi}{32} t\right).$$

Find **all** values of t during the first hour of the stunt at which the location of Helicopter B has x-coordinate less than or equal to -3. Give your answer as one or more intervals, with endpoints in exact form.

Answer: _____