CLOSED BOOK

A massless rigid rod of length \( R \) is driven to rotate with constant angular velocity \( \omega \) on a frictionless horizontal surface in the \( xy \) plane perpendicular to gravity. The rod is pivoted about its end point \( A \) at the origin. A second massless rigid rod of length \( S \) is free to rotate in the \( xy \) plane and is pivoted at point \( B \), located at the far end of the first rod. A point mass \( m \) is attached to the other end of the second rod. Both the pivots at \( A \) and \( B \) are frictionless.

At time \( t = 0 \) both rods lie along the \( x \)-axis and \( m \) is given a velocity slightly different from \( \omega(R + S) \) in magnitude. Solve for the subsequent motion of the mass \( m \) and interpret the solution to describe the motion qualitatively.

![Diagram](image)

Figure 1: A schematic of the arrangement.