

The figure below shows two conveyor belts that are placed one after the other. The belts are identical except they move in opposite directions with the same speed v . At time $t = 0$, a slippery block of ice is placed onto the belt at $s = 0$. Initially, the ice block has zero speed. Although the block of ice is slippery, it is not frictionless. Some time before the block gets to the point labeled “a”, it reaches the belt speed v .

On the axes provided, sketch plots of position $s(t)$, and its first two time derivatives $\dot{s}(t)$, and $\ddot{s}(t)$. Your plots should begin at $t = 0$ and continue until the block reaches the position a distance L from the starting point (shown dotted) a *second* time.

