

In the figure below, a conveyor belt is moving to the right with constant speed v . At time $t = 0$, a slippery block of ice is placed onto the belt. 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 .

1. Draw a free body diagram of the block. Which direction does the friction force act?
 - A. To the left.
 - B. To the right.
 - C. Neither, there is no friction.
2. On the axes provided, sketch plots of position $s(t)$, and its first two time derivatives $\dot{s}(t)$, and $\ddot{s}(t)$.

