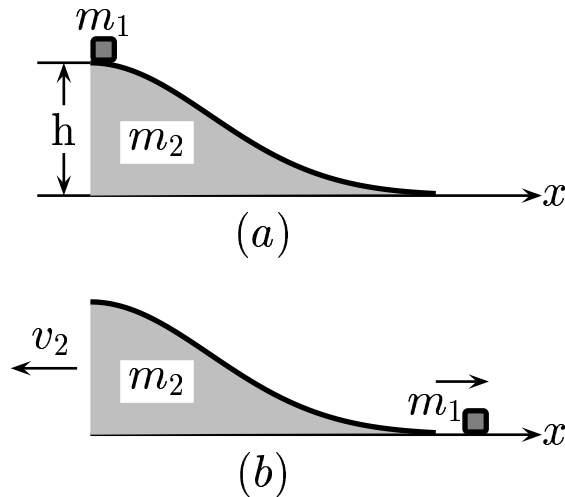


Assume: A small block of mass  $m_1$  is released from rest at the top of a curved frictionless wedge of mass  $m_2$ , where  $m_2 \gg m_1$ , which sits on a frictionless horizontal surface as shown.



As the block slides down the curved surface the  $x$ -coordinate  $x_{cm}$  of the center of mass of the  $(m_1 + m_2)$  system

- A) moves to right.
- B) moves to left.
- C) remains at rest.

Note: There is no external force acting on the system, along the horizontal direction; i.e.,  $F_{cm} = 0$ .

But  $F_{cm} = \frac{dp_{cm}}{dt}$ , where  $p_{cm}$  is the component of the momentum vector of the center of mass along the horizontal direction.

For the present case  $p_{cm}$  is constant.

Initially,  $p_{cm} = 0$ . This implies that during the entire process, the location of the center of the mass remains at rest.

Answer **C**.