IC-W08D2-8 Sliding Cube and Block

A block of mass $m_b$ sits at rest on a frictionless table; the block has a circular surface of radius $R$ as shown in the figure. A small cube of mass $m_c$ and speed $v_{c,0}$ is incident upon the block; the cube slides without friction on the table and slides without friction up the block. At the top of the block, the cube compresses a spring of spring constant $k$ until it momentarily comes to rest a height $R$ above the table. The cube then slides back down until it leaves the block.

a) How much did the spring compress?

b) What is the final speed of the block when the cube is no longer on it?