Problem 3.1 (new)
It is desired to have the package shown deposited on the horizontal surface with a speed of 1.5 m/s. Knowing that \( r = 0.3 \) m, (a) determine the required initial speed \( v_0 \) when the first loop is used, (b) show that this requirement cannot be fulfilled by the second loop, (c) determine the smallest \( v_0 \) so that the package will be deposited on the horizontal surface when the second loop is used.

![First Loop](image1)

![Second Loop](image2)

Problem 3.3 (3.7 in the text)
A small block slides at a speed \( v = 8 \) ft/s on a horizontal surface at a height \( h = 3 \) ft above the ground. Determine a) the angle \( \theta \) at which it will leave the cylindrical surface \( BCD \) and b) the distance \( x \) at which it will hit the ground. Neglect friction and air resistance.

Problem 3.3 (new)
A 3-lb collar is attached to a spring and slides without friction along a circular rod in a horizontal plane. The spring has an undeformed length of 6 in. and a constant \( k = 1.5 \) lb/in. Knowing that the collar is in equilibrium at \( A \) and is given a slight push to get it moving, determine the velocity of the collar (a) as it passes through \( B \), (b) as it passes through \( C \), (c) the normal force between the rod and the collar at \( C \).