1. A 12 kg block collides with a horizontal spring of k=100 N/m. Find the speed of the block before the collision if the spring was compressed by 0.1 m.
2. A 6 kg block travelling 15 m/s collides with a horizontal spring and compresses it by 5 cm. Find the k value of the spring.
3. An 8 kg block travelling 25 m/s collides with a nonlinear spring with force given by . What is the speed of the object when the spring is compressed by 6 cm?
4. An 11 kg block is initially loaded in a horizontal spring with k= 900 N/m compressed by 1 cm. If the coefficient of friction between the table and block is 0.4, find how far the block slides before coming to rest.
5. A 7 kg block is loaded in a vertical spring with constant k = 850 N/m compressed by 3 cm. When the spring and block are released, determine the maximum height attained by the block.
6. A 16 kg block slides on a rough horizontal surface before coming to rest. If the initial speed of the block is 18 m/s and the coefficient of friction between the block and the surface is 0.75, find the average power produced by the friction as the block stops.