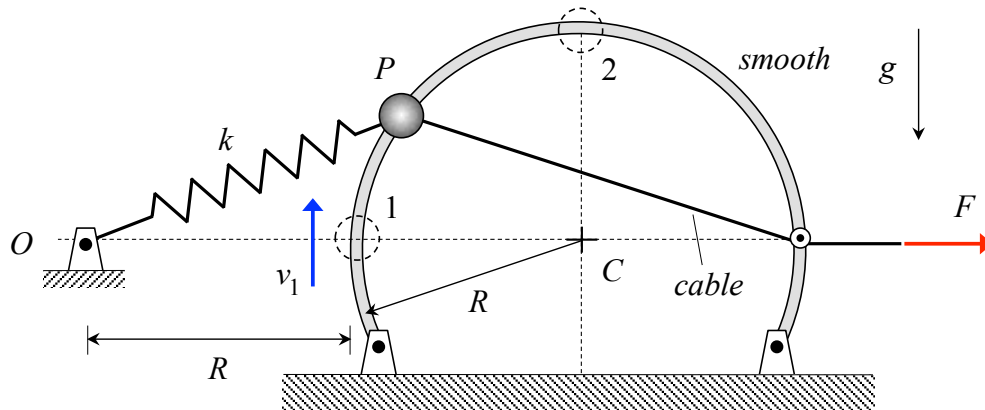**Homework H4.V**

Given: A particle P of mass m is able to slide along a smooth circular arc guide. A spring (of stiffness k and unstretched length R) is attached between P and the fixed pin O. An inextensible cable is attached to P with a constant force F being applied at the free end of the cable. When P is at position 1, it is traveling with a speed of v_1.

Find: Determine the speed of P when it reaches position 2.

Leave your answer in terms of, at most: m, g, R, F, v_1 and k.