CLPhys1 10.P.006. (1511528)

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Previewer Tools

Loop-the-Loop In Fig. 10-30, a small block of mass $m = 3.0$ kg can slide along the frictionless loop-the-loop. The block is released from rest at point P, at height $h = 5R$ above the bottom of the loop. (Use any variable or symbol stated above along with the following as necessary: g.)
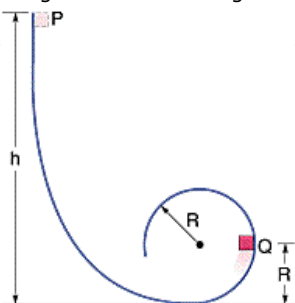

Figure 10-30

(a) How much work does the gravitational force do on the block as the block travels from point P to point Q?

$W =$

(b) How much work does the gravitational force do on the block as the block travels from point P to the top of the loop?

$W =$

(c) If the gravitational potential energy of the block-Earth system is taken to be zero at the bottom of the loop, what is the potential energy when the block is at point P?

$U_P =$

(d) If the gravitational potential energy of the block-Earth system is taken to be zero at the bottom of the loop, what is the potential energy when the block is at point Q?

$U_Q =$

(e) If the gravitational potential energy of the block-Earth system is taken to be zero at the bottom of the loop, what is the potential energy when the block is at the top of the loop?

$U_{top} =$

(f) If, instead of being released, the block is given some initial speed downward along the track, do the answers to (a) through (e) increase, decrease, or remain the same?

○ some increase, some decrease

○ increase

○ decrease

○ remain the same

Question Details