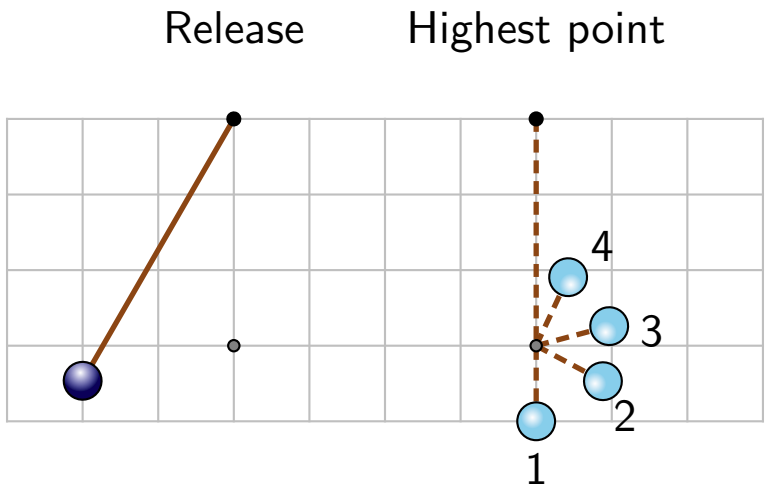
Question 1

A pendulum is released from rest. The string encounters a "peg" in its path. Which indicates the highest point that the pendulum ball reaches after the string strikes the peg?



Warm Up Question 1

A conservative force is one which is such that the work done by that force only depends on the initial and final configuration of the system. Is a spring force conservative? Explain your answer.

1. Yes. It only depends on initial and final positions.
2. Yes. There is a potential energy for the spring force.
3. No. The size of the force depends on the stretch and varies with time.

Question 2

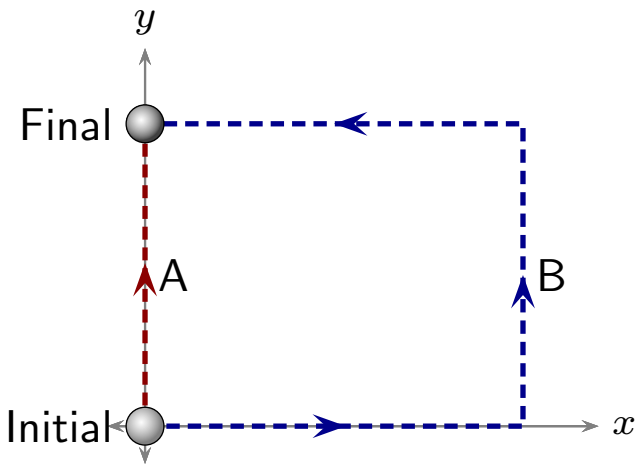
An object can slide left or right along a linear track. There is friction between the object and the track.

Which of the following is true regarding work done by the frictional force?

1. Always positive.
2. Always negative.
3. Always zero.
4. Positive when object moves right, negative when object moves left.
5. Negative when object moves right, positive when object moves left.

Question 3

A heavy ball can be moved on a rough horizontal surface from an initial to a final location via one of the two illustrated routes.



Which of the following is true about the *magnitude of the work done by the frictional force*?

1. Same for path A and B.
2. Larger for path A.
3. Larger for path B.
4. Depends on the speed of the ball.

Warm Up Question 2

A pebble slides back and forth inside a bowl. There is friction between the pebble and the surface of the bowl. The energy of the pebble is defined as $E = K + U_{\mathrm{grav}}$. As the pebble moves does this stay constant, increase or decrease? Explain your answer.

1. Decreases. Friction eventually removes the energy.
2. Constant. Energy is conserved and there is a constant transfer between K and $U\mathrm{grav}.$