Answer on Question #48600, Physics, Mechanics | Kinematics | Dynamics

A mass tied to a string moves in a vertical circle with a uniform speed of 5 m/s at the point where the string is horizontal breaks. The mass will reach a height above that point will be nearly (radius =1 m)

Solution:

The kinematic equation that describes an object's motion is:

$$2ah = v_f^2 - v_0^2$$

where a is acceleration, h is coordinate, v_0 is initial velocity and v is final velocity.

$v_0 = v$ and $v_f = 0$.

$a = g = -9.81 \, m/s^2$ is acceleration.

Thus,

$$h = \frac{-v_0^2}{2g} = \frac{-5^2}{-2 * 9.81} = 1.27 \text{ m}$$

Answer: $h = 1.27$ m