Assignment 9

Due on 2020-04-21, 23:59 GMT

1. A simple pendulum makes a complete cycle in t1 = 1.0 seconds. Write down an equation that relates the period of a simple pendulum to its length. Using the equation, calculate the length of the pendulum. (4 points)

2. A spring of force constant k is used to suspend a block of mass m. The spring is initially unstretched. Find the equation of motion if the block is pulled down a distance d and then released. (4 points)

3. A mass m is suspended from a spring of force constant k. The mass is initially at rest. Find the equation of motion if the spring is suddenly stretched a distance d. (4 points)

4. A mass m is attached to a horizontal spring of force constant k. The mass is initially at rest. Find the equation of motion if the spring is given a horizontal impulse I. (4 points)

5. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t). (4 points)

6. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t) and a depression of initial position x0. (4 points)

7. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t) and an initial velocity v0. (4 points)

8. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t) and an initial position x0 and a velocity v0. (4 points)

9. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t), an initial position x0, and a velocity v0. (4 points)

10. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t), an initial position x0, and a velocity v0. (4 points)

11. A mass m is attached to a spring of force constant k and a damper of damping constant c. The mass is initially at rest. Find the equation of motion if the system is subjected to an external force F(t), an initial position x0, and a velocity v0. (4 points)