TASK 1

Assume that there is no friction and the carriage is empty.

1. Calculate the work done by a force of 1250 N in moving the carriage along the entire length of the ascent ramp.

2. What power will the motor develop when exerting the force of 1250 N if the ascent is made at a constant speed of 5.24m/s?

3. Calculate the mechanical energy of a wagon at the highest point if the ascent is made at a constant speed of 5.24m/s.

4. Deduce, applying the principle of conservation of energy, what will be the maximum value of the velocity?

5. At what point is this value reached?

6. Calculate the values of the kinetic energy and the potential energy at the top of the curl. What will be the velocity at this point?

7. What will be the speed on entering the curl and leaving it?

8. A trolley of mass 64 kg travelling on a roller coaster passes through point A, located at a height of 24 m, with a speed of 8 m/s. Neglecting the frictional force, determine:

a) At what height will the carriage be at point B, when its speed is 15 m/s.

b) The velocity at point C, where its height is 8 m.

c) The work done by the force of gravity to move the trolley from point A to point C.