CIRCULAR MOTION

Note that pounds is a unit of weight and not mass

KINETICS

There are four ways of solving problems in Kinetics

1. Method of Impulse/Momentum

2. Method of Inertia

3. Method of Energy/Workdone

4. Method of Conservation of Energy

METHOD OF INERTIA

METHOD OF IMPULSE/MOMENTUM

ENERGY/WORK DONE

When using this method, we need to take into consideration the values of F (force), x – x\_o (displacement), v, t

Work done from A to B = Kinetic Energy of B – Kinetic Energy of A

Work done = Force times displacement

The value of Work done can also be expressed as

The potential energy can be expressed in terms of gravitational and elastic potential energy

METHOD OF CONSERVATION OF ENERGY

From the method of conservation of mechanical energy, the total energy is constant

Recall that

Therefore,

QUESTIONS

1. A 20lb collar slides without friction along a vertical rod as shown. The spring attached to the collar has an undeformed length of 4in and a constant of 3lb/in. If the collar is released from rest in position 1. Determine its velocity after it has moved 6in in to position 2

Writing out values

Force constant, k = 3

x\_o = 4in

x\_i = 8in

At point 1.

At point two, the body has moved to its final position and it is at its highest velocity and the gravitational potential energy will be 0. However, it will still have some elastic potential energy.