**CURVILINEAR MOTION**

Curvilinear motion is the motion of a particle moving along a curve.

The velocity of the particle is tangential to the path. However, the acceleration is not usually tangential to the path

**PROJECTILE MOTION**

Initially, before the projection of the particle,

All at the origin

, ,

When projected,

The horizontal motion in a projectile motion is uniform. Therefore, there is no acceleration

The motion in vertical is uniformly accelerated. Therefore there is a constant acceleration of (-g)

**QUESTIONS ON PROJECTILES**

**VELOCITY VECTOR**

The velocity vector of a particle is tangential to the path of the particle. Acceleration vector is not tangential.

The velocity is tangential to the path and therefore will also have its unit vector tangential to the path

When two particles P and P` are moving, the relative velocity between them is

Also comparing their unit vectors

The angle between these two tangential unit vectors is

The relationship between the tangential unit vector and the normal unit vector is given by the relation

From the above, it can be seen that the velocity vector that is tangential is.

From here, applying the product rule,

, the tangential acceleration (centripetal acceleration) reflects the change in speed of the particle

, the normal acceleration (centrifugal acceleration) reflects the change of direction