

① What is uniform circular motion? How is uniform circular motion regarded as an accelerated motion? Explain.

→ As the rate of change of velocity is acceleration, so a uniform circular motion is an accelerated motion.

② An object is moving with uniform speed in a circle of radius  $r$ . Calculate the distance and displacement. (a) when it completes half the circle, (b) when it completes full circle, (c) what type of motion does the object possess?

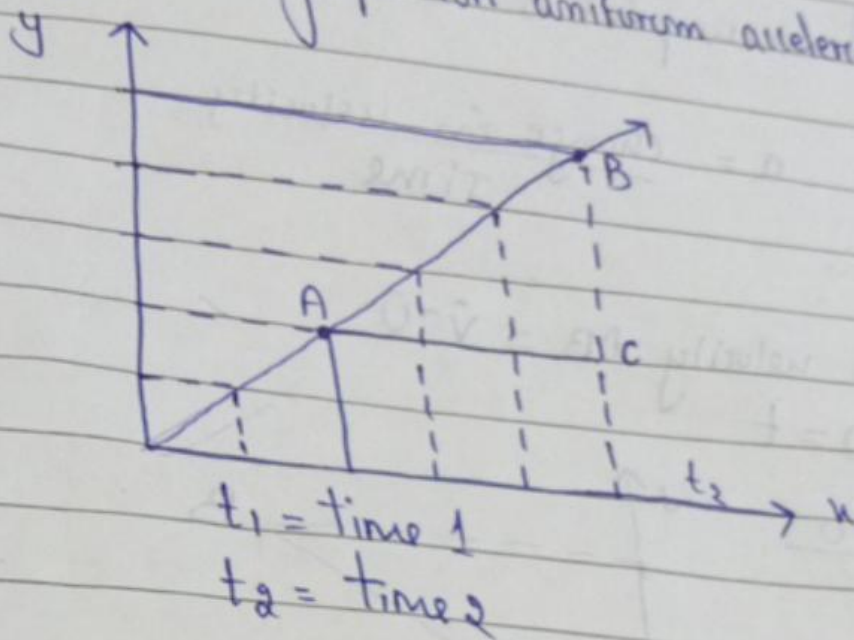
→ distance will be  $2 \times 3.14 (\text{pie}) \times r$

~~distance~~ displacement will be  $2r$  (diameter)

The motion is uniform circular motion as the object is moving in circular path with uniform motion.

- ③ Draw velocity-time graph for an uniformly accelerated object. using  $v = u + at$ .

→ velocity-time graph for uniform acceleration-



The graph will be a straight line as it is in uniform acceleration.

- ④ Write the three equations for the uniformly accelerated motion. Also derive the second and third equations by graphical method.

- $u$  = initial velocity of object  
 →  $v$  = final velocity of object  
 →  $a$  = uniform velocity of object

①

Let object reach point B after time  $(t)$

→

$$\text{slope} = a = \frac{\text{Change in velocity}}{\text{Time}}$$

②

$$\text{Change in velocity } AB = v - u$$

$$\text{time } AD = t$$

$$\therefore a = \frac{v - u}{t}$$

