

100 Solved Problems on Motion in Plane

This document contains 100 solved problems on motion in plane. These problems are designed to help students understand the concepts of kinematics and dynamics and to develop their problem-solving skills. The problems are arranged in order of increasing difficulty, so that students can start with easier problems and work their way up to more challenging ones.

Table of Contents

1. Problem 1: A particle moves along a straight line with a constant velocity of 10 m/s. What is the distance traveled by the particle in 5 seconds?
2. Problem 2: A particle moves along a straight line with an initial velocity of 5 m/s and a constant acceleration of 2 m/s^2 . What is the velocity of the particle after 10 seconds?
3. Problem 3: A particle is projected vertically upward with an initial velocity of 10 m/s. What is the maximum height reached by the particle?
4. Problem 4: A particle is dropped from a height of 100 m. What is the velocity of the particle when it hits the ground?
5. Problem 5: A particle moves along a circular path of radius 5 m with a constant speed of 10 m/s. What is the centripetal acceleration of the particle?
6. Problem 6: A particle moves along a circular path of radius 5 m with a constant acceleration of 2 m/s^2 . What is the tangential acceleration of the particle?
7. Problem 7: A particle moves along a parabolic path. The equation of the parabola is $y = x^2$. What is the velocity of the particle at the point (1, 1)?
8. Problem 8: A particle moves along a helical path. The equation of the helix is $r = 5 \cos(\theta)$ and $z = 5 \sin(\theta)$. What is the velocity of the particle at the point (5, 0, 0)?
9. Problem 9: A particle is moving in a uniform circular motion. The radius of the circle is 5 m and the speed of the particle is 10 m/s. What is the angular velocity of the particle?
10. Problem 10: A particle is moving in a uniform circular motion. The radius of the circle is 5 m and the angular velocity of the particle is 2 rad/s. What is the speed of the particle?

Problems

Problem 1:

A particle moves along a straight line with a constant velocity of 10 m/s. What is the distance traveled by the particle in 5 seconds?

100 Solved Problems on M

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by Jitender Singh

★★★★★ 4.2 out of 5

Language : English

File size : 3541 KB

Screen Reader: Supported

Print length : 63 pages

Lending : Enabled

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Solution:

The distance traveled by the particle is given by the following equation:

$$d = v * t$$

where:

* d is the distance traveled (in meters) * v is the velocity (in meters per second) * t is the time (in seconds)

Substituting the given values into the equation, we get:

$$d = 10 \text{ m/s} * 5 \text{ s} = 50 \text{ m}$$

Therefore, the distance traveled by the particle in 5 seconds is 50 meters.

Problem 2:

A particle moves along a straight line with an initial velocity of 5 m/s and a constant acceleration of 2 m/s². What is the velocity of the particle after 10 seconds?

Solution:

The velocity of the particle after 10 seconds is given by the following equation:

$$v = u + at$$

where:

* v is the final velocity (in meters per second) * u is the initial velocity
(in meters per second) * a

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