

Two simultaneous projectiles

Questions

For all the questions given below consider the time interval of observation from the instant of projection to the instant when one of the bodies reaches the ground

1. Does the distance between the projectiles remain constant during their motion?
2. Does the angle of relative displacement vector change with time?
3. Is it possible for body B to appear to move horizontally w.r.t. A?
4. Is it possible for body A to appear to move vertically w.r.t. Body B?
5. What is relative motion of A w.r.t. B when they have same initial velocity but complimentary angles of projection?
6. For any values of different velocities and angles of projection can relative displacement of A w.r.t. B be zero throughout the motion?
7. Is the final relative displacement of A w.r.t. B zero if horizontal component of initial velocity of A is equal to that of B?

Note :

While simulations help to provide valuable insights and visualizations, a rigorous mathematical solution should always be considered as a benchmark, demonstrating not just familiarity with the concept, but a deep understanding of the underlying principles.

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