

Consider a satellite in space and its horizontal velocity is less than critical velocity then what is direction of satellite ?

Solution: satellite in space moves in an elliptical orbit around the earth at orbital velocity:

$$V = \sqrt{G \frac{M}{R}}$$

If the speed of the satellite is less than the orbital velocity, the trajectory of the satellite will cross the Earth (i.e the satellite will fall to the ground, B-trajectory on the figure). The trajectories of the satellites in the fall can be seen as a parabola.

