

**Q) An astronaut accidentally gets separated out of his small spaceship accelerating in inter stellar space at a constant rate of 100 m s^{-2} . What is the acceleration of the astronaut the instant after he is outside the spaceship ?
(Assume that there are no nearby stars to exert gravitational force on him.)**

**Ans) By the first law of motion, the acceleration must be Zero.
Given there are no near by starts to exert gravitational pull, and the small spaceship exerts negligible gravitational attraction on him, the net force acting on the astronaut, once he is out of the spaceship is zero.**