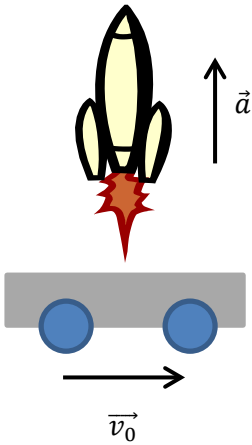


2D Kinematics examples

Example 1

A rocket is launched with an upward vertical acceleration $\vec{a} = 30 \hat{j} \text{ m}^2/\text{s}$ from a cart moving to the right with constant velocity \vec{v}_0 .



- Find the equation $y(x)$ of the trajectory of the rocket.
- If the rocket passes through a hoop located 2 m to the right and 20 m above the launch point, find the speed v_0 of the cart.

Example 2

On planet Exidor, a student tosses a ball with an initial velocity $\vec{v} = 2\vec{i} + 2\vec{j}$. The ball follows a parabolic trajectory as depicted below. The locations of the ball at 0s, 1s, 2s and 3s are shown on the parabola.

- What is \vec{v} at the instants 1s, 2s, and 3s?
- What is the value of g on planet Exidor?

