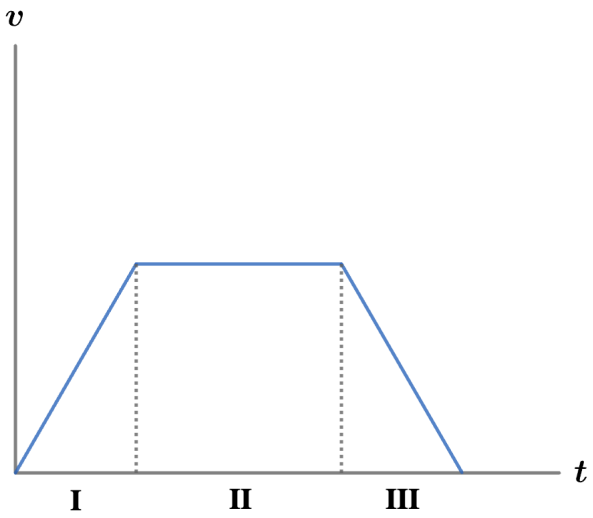
2024 F=ma Exam: Problem 7

Kevin S. Huang



In Part I of the motion, we have constant acceleration a so using a kinematics equation,

$$v^2 = 0^2 + 2ax$$
$$v(x) = \sqrt{2ax}$$

In Part II of the motion, we have constant velocity so

$$v(x) = v_0$$

In Part III of the motion, we have constant acceleration $-a$ so using a kinematics equation,

$$v^2 = v_0^2 + 2(-a)x$$
$$v(x) = \sqrt{v_0^2 - 2ax}$$

Combining the three parts, the answer is $\boxed{\text{C}}$.