HW2-3 Soln)

Set the origin at the beginning of the problem.

x_i = 0 m

x_f = ? ←

v_i = +6 m/s

v_f = +21 m/s

a = ? ←

t = 4 seconds

(1)

$$v_f = v_i + at$$

$$a = \frac{v_f - v_i}{at} = \frac{21 - 6}{4} = 3.75\ \text{m/s}^2$$

(3)

$$x = x_i + v_i t + \frac{1}{2}at^2$$

$$\Delta x = x - x_i = v_i t + \frac{1}{2}at^2 = (6)4 + \frac{1}{2}(3.75)4^2 = 54\ \text{m}$$

or

(2) + definition of v_{AVE}

$$\Delta x = v_{AVE} t = \frac{v + v_i}{2} t = \frac{21 + 6}{2} 4 = 54\ \text{m}$$