

2/20 Acceleration period :

$$v = v_0 + at : \frac{22}{3.6} = 0 + \frac{9.81}{4} t_a, t_a = 2.49 \text{ s}$$

Note that The deceleration time $t_d = t_a$

$$v^2 = v_0^2 + 2a \Delta s : \left(\frac{22}{3.6}\right)^2 = 0^2 + 2 \frac{9.81}{4} \Delta s_a$$

$$\Delta s_a = 7.61 \text{ m} = \Delta s_d$$

$$\text{Cruise period : } \Delta s_c = 350 - \Delta s_a - \Delta s_d = 335 \text{ m}$$

$$\Delta s = v_c t_c : 335 = \frac{22}{3.6} t_c, t_c = 54.8 \text{ s}$$

$$\text{Total run time } t = t_c + t_a + t_d = \underline{59.8 \text{ s}}$$