2/55 For an acceleration of form $a = -g - kv^2$, we cite the results from Probs. 2/51 & 2/52

$$\begin{cases} t_u = \dfrac{1}{\sqrt{gk}} \tan^{-1}\left(v_0 \sqrt{\dfrac{k}{g}}\right) \\ h = \dfrac{1}{2k} \ln\left[\dfrac{g + kv_0^2}{g}\right] \end{cases}$$

For the numbers at hand:

$$t_u = \frac{1}{\sqrt{9.81\,(0.0005)}} \tan^{-1}\left(120\sqrt{\frac{0.0005}{9.81}}\right) = 10.11 \text{ s}$$

$$h = \frac{1}{2(0.0005)} \ln\left[\frac{9.81 + 0.0005\,(120)^2}{9.81}\right] = 550 \text{ m}$$

Down (v = constant): $y = y_0 + v_{y_0} t$

$$0 = 550 - 4t_d$$

$$t_d = 137.6 \text{ s}$$

Flight time $t = t_u + t_d = 10.11 + 137.6 = \underline{147.7 \text{ s}}$