2/46 (a) $a = 2\ m/s^2 = \text{constant}$

With $v = 250/3.6 = 69.4\ m/s$, we have

$v^2 - v_0^2 = 2a(s - s_0)$: $69.4^2 - 0^2 = 2(2)s$

$$\underline{s = 1206\ m}$$

(b) $a = a_0 - kv^2 = v\frac{dv}{ds}$

$$\int_0^s ds = \int_0^v \frac{v\,dv}{a_0 - kv^2}$$

$$s = -\frac{1}{2k}\ln(a_0 - kv^2)\Big|_0^v$$

$$= -\frac{1}{2k}\ln\left[\frac{a_0 - kv^2}{a_0}\right]$$

$$s = -\frac{1}{2(4)(10^{-5})}\ln\left[\frac{2 - 4(10^{-5})(69.4)^2}{2}\right]$$

$$= \underline{1268\ m}$$