

$$\frac{2}{54} \quad a = 31.4 - 5(10^{-5})v^2 = c_1 - c_2v^2 = \frac{dv}{dt}$$

$$\int_0^t dt = \int_0^v \frac{dv}{c_1 - c_2v^2} = \frac{1}{\sqrt{c_1c_2}} \tanh^{-1} \sqrt{\frac{c_2}{c_1}} v \Big|_0^v$$

$$t = \frac{1}{\sqrt{c_1c_2}} \tanh^{-1} \sqrt{\frac{c_2}{c_1}} v$$

$$\text{For } v = 190 \left( \frac{5280}{3600} \right) = 279 \text{ ft/sec,}$$

$$t = \frac{1}{\sqrt{31.4(5)(10^{-5})}} \tanh^{-1} \sqrt{\frac{5(10^{-5})}{31.4}} (279)$$

$$= \underline{9.27 \text{ sec}}$$