

41. We use Eq. 9-43. Then

$$\begin{aligned}v_f &= v_i + v_{\text{rel}} \ln \frac{M_i}{M_f} \\&= 105 \text{ m/s} + (253 \text{ m/s}) \ln \frac{6090 \text{ kg}}{6010 \text{ kg}} \\&= 108 \text{ m/s} .\end{aligned}$$