31. We denote the magnitude of the frictional force αv, where $\alpha = 70\,\mathrm{N \cdot s/m}$. We take the direction of the boat's motion to be positive. Newton's second law gives

$$-\alpha v = m\,\frac{dv}{dt}\ .$$

Thus,

$$\int_{v_0}^{v} \frac{dv}{v} = -\frac{\alpha}{m}\int_0^t dt$$

where v_0 is the velocity at time zero and v is the velocity at time t. The integrals are evaluated with the result

$$\ln\frac{v}{v_0} = -\frac{\alpha t}{m}\ .$$

We take $v = v_0/2$ and solve for time:

$$t = \frac{m}{\alpha}\,\ln 2 = \frac{1000\,\mathrm{kg}}{70\,\mathrm{N \cdot s/m}}\,\ln 2 = 9.9\ \mathrm{s}\ .$$