60. (a) The energy delivered by the battery is the integral of Eq. 28-14 (where we use Eq. 31-43 for the current):

$$\begin{aligned}\int_0^t P_{\text{battery}}\,dt &= \int_0^t \frac{\mathcal{E}^2}{R}\left(1-e^{-Rt/L}\right)dt = \frac{\mathcal{E}^2}{R}\left[t+\frac{L}{R}\left(e^{-Rt/L}-1\right)\right] \\ &= \frac{(10.0\,\text{V})^2}{6.70\,\Omega}\left[2.00\,\text{s}+\frac{(5.50\,\text{H})\left(e^{-(6.70\,\Omega)(2.00\,\text{s})/5.50\,\text{H}}-1\right)}{6.70\,\Omega}\right] \\ &= 18.7\text{ J}\,.\end{aligned}$$

(b) The energy stored in the magnetic field is given by Eq. 31-51:

$$\begin{aligned}U_B &= \frac{1}{2}Li^2(t) = \frac{1}{2}L\left(\frac{\mathcal{E}}{R}\right)^2\left(1-e^{-Rt/L}\right)^2 \\ &= \frac{1}{2}(5.50\,\text{H})\left(\frac{10.0\,\text{V}}{6.70\,\Omega}\right)^2\left[1-e^{-(6.70\,\Omega)(2.00\,\text{s})/5.50\,\text{H}}\right]^2 \\ &= 5.10\text{ J}\,.\end{aligned}$$

(c) The difference of the previous two results gives the amount "lost" in the resistor: $18.7\,\text{J} - 5.10\,\text{J} = 13.6\,\text{J}$.