87. The cube has six faces, each of which has an area of $\left(6.0 \times 10^{-6}\,\mathrm{m}\right)^2$. Using Kelvin temperatures and Eq. 19-40, we obtain

$$\begin{aligned} P_{\mathrm{net}} &= \sigma \varepsilon A \left(T_{\mathrm{env}}^4 - T^4\right) \\ &= \left(5.67 \times 10^{-8}\,\frac{\mathrm{W}}{\mathrm{m^2 \cdot K^4}}\right)(0.75)\left(2.16 \times 10^{-10}\,\mathrm{m^2}\right)\left((123.15\,\mathrm{K})^4 - (173.15\,\mathrm{K})^4\right) \\ &= -6.1 \times 10^{-9}\ \mathrm{W}\ . \end{aligned}$$