AME 20231
Homework 6
Due: Thursday, 24 February 2022, 9:00 AM, on Sakai

1. 3.92, take instead the final temperature to be 72°C.

2. 3.102, take instead the final temperature to be 700 K.

3. 3.117, take instead the initial temperature to be 355 K.

4. 3.159. Take instead the average power use per person as 79 GJ/yr.

5. You supervise an industrial process which uses forced convection to cool hot 5 g steel ball bearings. In the forced convection environment, the heat transfer coefficient is $h = 0.1 \text{ kW/m}^2/\text{K}$. The initial temperature is 1500 K. The ambient temperature is 300 K. Using the method developed in class, estimate the time constant of cooling, find an expression for $T(t)$, and find the time when $T = 350$ K. Plot $T(t)$. Repeat the analysis for a 5 kg sphere.

Review 1 is also due.