**Problem:**

Create a table of results for the ball temperature for times from 0 to 200 seconds at 2-second intervals where the time constant τ = 60 s and the initial ball temperature is (Ti ) of 900 °C given the following equation:

With varying oil bath temperatures of 100, 200, 400 & 600 °C.

**Solution:**

**Questions with Answer:**

Does the solution make sense? Why?

* Looking at the chart and the number the solution makes sense heat will naturally flow out of the ball bearing and into the oil bath until both are at the same temperature.

How long does it take for the ball bearing to cool to a temperature of less than 450 °C in the case when the oil bath temp is 200 °C? How long does it take in the case when the oil bath temp is 400 °C?

* At a bath temp of 200 °C. It takes about 62 seconds for the ball bearing to cool to just below 450 °C.
* At a bath temp of 400 °C. It takes about 85 seconds for the ball bearing to cool to just below 450 °C.