

Lab 5: 02/25/04
Transient Heat Problem

1. Consider the steel plate with dimensions (in cm) as shown in figure 1. It is heated suddenly on the left side by a brazing torch as specified in the figure. All other boundaries and the body are subjected to heat convection with $h = 10W/(m^2C)$ and $T_\infty = 20C$.

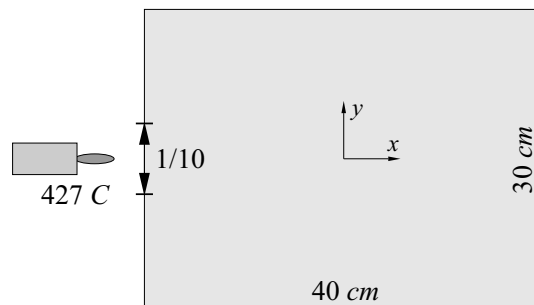


Figure 1: Heated Plate

2. Modell and solve this transient problem in femlab using a suitable time increment.
3. Use the femlab option to animate the solution $T(x, y, t)$.
4. Plot $T(x)$ along the centerline for several times t (do this in matlab using *postinterp*).
5. How long does it take to heat the entire plate to at least 200C?