$$\theta_o = \frac{T_o - T_\infty}{T_i - T_\infty}$$
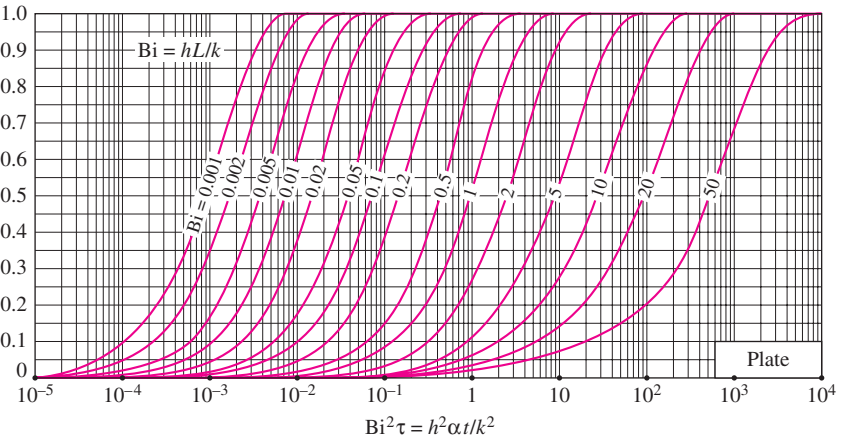

$$\tau = \alpha t/L^2$$

(a) Midplane temperature (from M. P. Heisler)
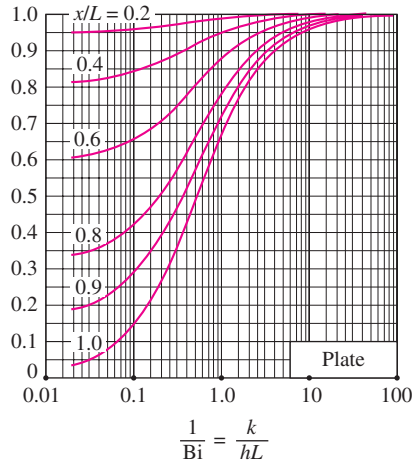
$$\theta = \frac{T - T_\infty}{T_o - T_\infty}$$

$$\frac{Q}{Q_{max}}$$

$$\frac{1}{Bi} = \frac{k}{hL}$$

$$Bi^2\tau = h^2\alpha t/k^2$$

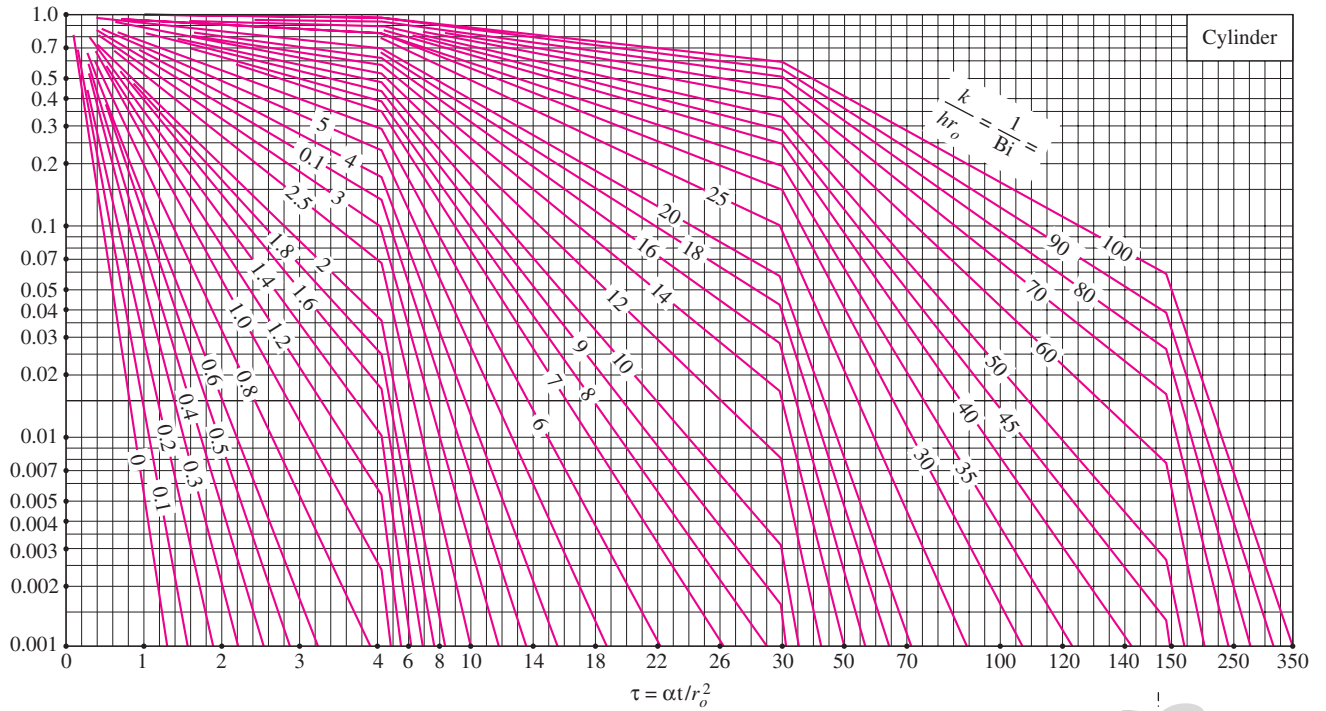(b) Temperature distribution (from M. P. Heisler)   (c) Heat transfer (from H. Gröber et al.)
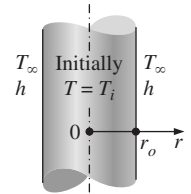
Transient temperature and heat transfer charts for a plane wall of thickness 2L initially at a uniform temperature T_i subjected to convection from both sides to an environment at temperature T_∞ with a convection coefficient of h.

where m is the mass, V is the volume, ρ is the density, and C_p is the specific heat of the body. Thus, Q_{max} represents the amount of heat transfer for $t \to \infty$. The amount of heat transfer Q at a finite time t will obviously be less than this
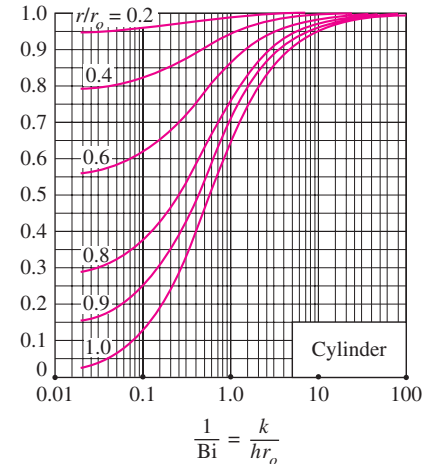
$$\theta_o = \frac{T_o - T_\infty}{T_i - T_\infty}$$

$$\tau = \alpha t / r_o^2$$

(*a*) Centerline temperature (from M. P. Heisler)

$$\theta = \frac{T - T_\infty}{T_o - T_\infty}$$

$$\frac{Q}{Q_{max}}$$

$$\frac{1}{Bi} = \frac{k}{hr_o}$$

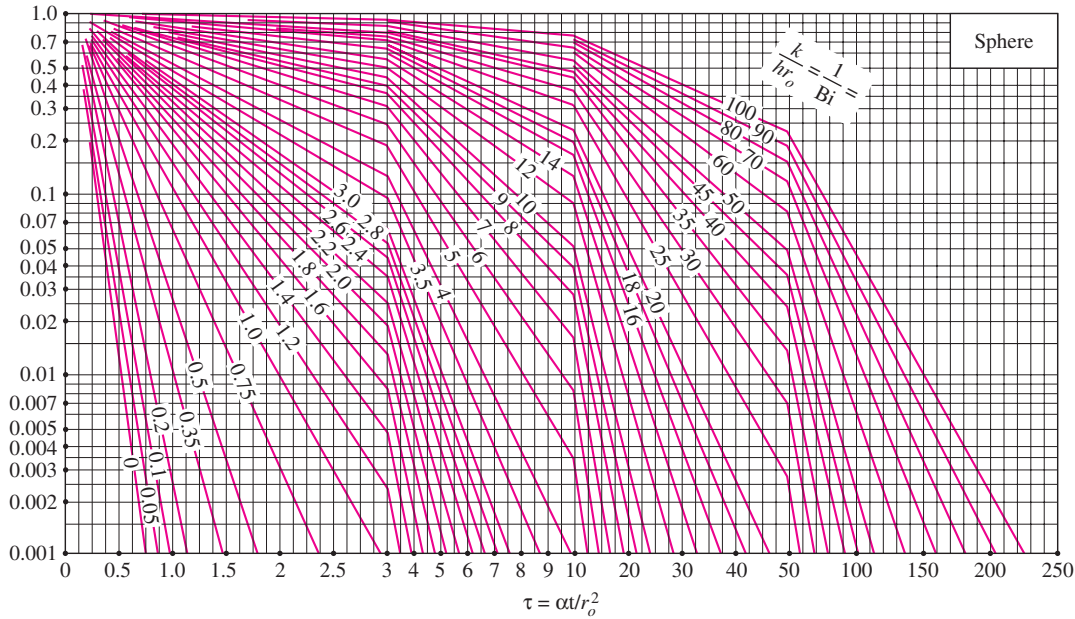$$Bi^2\tau = h^2 \alpha t / k^2$$

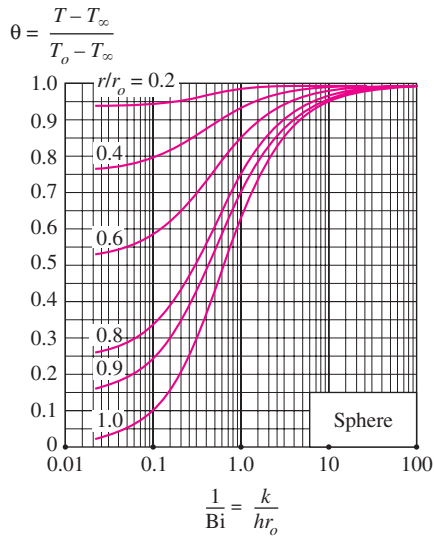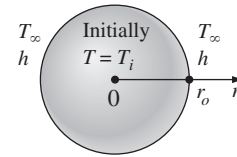(*b*) Temperature distribution (from M. P. Heisler) (*c*) Heat transfer (from H. Gröber et al.)
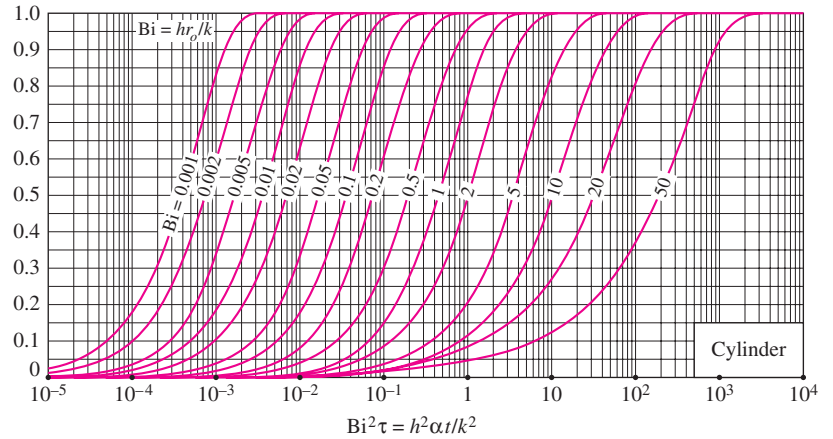
Transient temperature and heat transfer charts for a long cylinder of radius r_o initially at a uniform temperature T_i subjected to convection from all sides to an environment at temperature T_∞ with a convection coefficient of h.

$$\theta_o = \frac{T_o - T_\infty}{T_i - T_\infty}$$

$$\tau = \alpha t / r_o^2$$

(*a*) Midpoint temperature (from M. P. Heisler)

$$\theta = \frac{T - T_\infty}{T_o - T_\infty}$$

$$\frac{1}{\text{Bi}} = \frac{k}{hr_o}$$

$$\frac{Q}{Q_{max}}$$

$$\text{Bi}^2\tau = h^2\alpha t/k^2$$

(*b*) Temperature distribution (from M. P. Heisler) (*c*) Heat transfer (from H. Gröber et al.)

Transient temperature and heat transfer charts for a sphere of radius r_o initially at a uniform temperature T_i subjected to convection from all sides to an environment at temperature T_∞ with a convection coefficient of *h*.
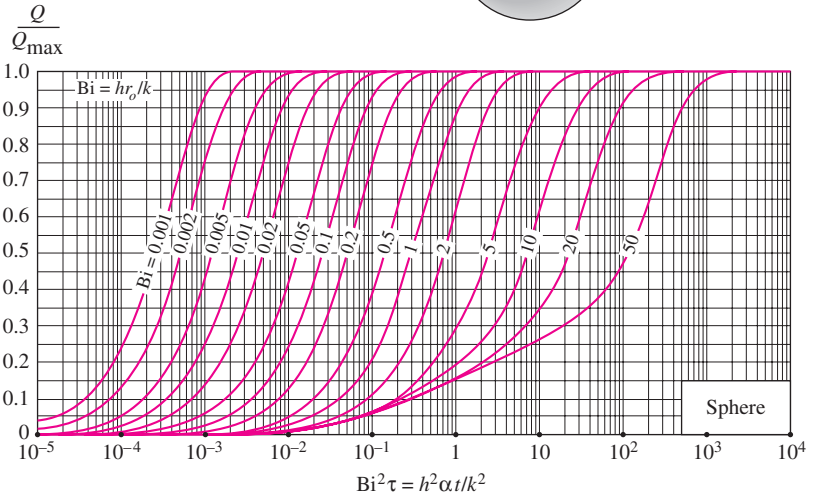
maximum. The ratio Q/Q_{max} is plotted in Figures 4–13*c*, 4–14*c*, and 4–15*c* against the variables Bi and $h^2\alpha t/k^2$ for the large plane wall, long cylinder, and