

**Problem 17**

- (a) Solve the Gompertz equation

$$dy/dt = ry \ln(K/y),$$

subject to the initial condition  $y(0) = y_0$ .

*Hint:* You may wish to let  $u = \ln(y/K)$ .

- (b) For the data given in Example 1 in the text ( $r = 0.71$  per year,  $K = 80.5 \times 10^6$  kg,  $y_0/K = 0.25$ ), use the Gompertz model to find the predicted value of  $y(2)$ .
- (c) For the same data as in part (b), use the Gompertz model to find the time  $\tau$  at which  $y(\tau) = 0.75K$ .