

Name: \_\_\_\_\_

You have five minutes to complete the following problems.

1. The amount of ozone,  $Q$ , in the atmosphere is decreasing at a rate proportional to the amount of ozone present. If time  $t$  is measured in years, the constant of proportionality is  $-0.0025$ .

(a) Write a differential equation for  $Q$  as a function of  $t$ .

(b) Give the general solution for the differential equation.

2. Consider the differential equation  $y' = y^2$ . Choose the slope field corresponding to this differential equation and sketch three solution curves, one with  $y(0) > 0$ , one with  $y(0) < 0$ , and one with  $y(0) = 0$ .

