Moore's Law

Note: This exercise goes with Chapter 2 of Calculus with Applications.

According to Moore's Law, hypothesized in 1965 by Intel co-founder Gordon Moore, the number of transistors on a computer chip doubles every 18 months.* Alfred E. Brenner has observed that Moore's Law is no longer accurate, and that the doubling time is now closer to two years.**

In Sec. 2.5 of *Calculus with Applications*, Exercise 44d, it was found that the number of transistors on various chips made by Intel could be approximated by $y = 2336(1.39)^x$, where $x = 0$ corresponds to 1971.

a. What is the doubling time for the function $y = 2336(1.39)^x$?

b. Suppose a function of the form $y = y_0 a^x$, where x is in years, describes a quantity that doubles every 18 months. What is the value of a?

Answers can be found on the next page.

* *Science,* Vol. 274, Dec. 13, 1996, p. 1834.

** *Science,* Vol. 275, March 14, 1997, p. 1551.

Answers to **Moore's Law**

a. 2.1 years

b. 1.59