COMPOUND INTEREST In Exercises 47–50, use the example below to find the balance of the account compounded with the given frequency.

EXAMPLE   Use the general compound interest formula

FINANCE You deposit $1000 in an account that pays 3% annual interest. Find the balance after 8 years if the interest is compounded monthly.

Solution

The general formula for compound interest is $A = P\left(1 + \frac{r}{n}\right)^{nt}$. In this formula, P is the initial amount, called principal, in an account that pays interest at an annual rate r and that is compounded n times per year. The amount A (in dollars) is the amount in the account after t years.

Here, the interest is compounded monthly. So, $n = 12$.

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$ **Write compound interest formula.**

$$= 1000\left(1 + \frac{0.03}{12}\right)^{12(8)}$$ **Substitute 1000 for *P*, 0.03 for *r*, 12 for *n*, and 8 for *t*.**

$$= 1000(1.0025)^{96}$$ **Simplify.**

$$\approx 1270.868467$$ **Use a calculator.**

▶ The account balance after 8 years will be about $1270.87.

47. Yearly   **48.** Quarterly   **49.** Daily ($n = 365$)

50. WRITING   Which compounding frequency yields the highest balance in the account in the example above: monthly, yearly, quarterly, or daily? *Explain* why this is so.

51. CHALLENGE You invest $500 in an account that earns interest compounded monthly. Use a table or graph to find the least annual interest rate (to the nearest tenth of a percent) that the account would have to earn if you want to have a balance of $600 in 4 years.

MIXED REVIEW FOR TAKS

52. ◆ **TAKS PRACTICE** Which graph is the best representation of $y = x$? *TAKS Obj. 2*

Ⓐ

Ⓑ

Ⓒ

Ⓓ