

Parents as Partners*For use with Chapter 7*

Chapter Overview One way you can help your student succeed in Chapter 7 is by discussing the lesson goals in the chart below. When a lesson is completed, ask your student the following questions. “What new words and formulas did you learn? How can you apply the ideas of the lesson to your life?”

Lesson Title	Lesson Goals	Key Applications
7.1: Graph Exponential Growth Functions	Graph and use exponential growth functions.	<ul style="list-style-type: none"> • Finance • DVD players • Internet
7.2: Graph Exponential Decay Functions	Graph and use exponential decay functions.	<ul style="list-style-type: none"> • Snowmobiles • Medicine • Bike Costs
7.3: Use Functions Involving e	Study functions involving the natural base e .	<ul style="list-style-type: none"> • Biology • Camera Phones • Termite Population
7.4: Evaluate Logarithms and Graph Logarithmic Functions	Evaluate logarithms and graph logarithmic functions.	<ul style="list-style-type: none"> • Tornadoes • Altimeter • Chemistry
7.5: Apply Properties of Logarithms	Rewrite logarithmic expressions.	<ul style="list-style-type: none"> • Sound Intensity • Conversation • Parking Garage
7.6: Solve Exponential and Logarithmic Equations	Solve exponential and logarithmic equations.	<ul style="list-style-type: none"> • Overheated Engine • Astronomy • Cooking
7.7: Write and Apply Exponential and Power Functions	Write exponential and power functions.	<ul style="list-style-type: none"> • Scooters • Wingspans • Business

Big Ideas for Chapter 7

In Chapter 7, you will apply the big ideas listed in the Chapter Opener (see page 477) and reviewed in the Chapter Summary (see page 538).

1. Graphing exponential and logarithmic functions
2. Solving exponential and logarithmic equations
3. Writing and applying exponential and power functions

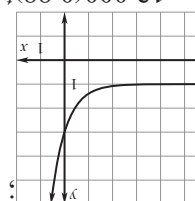
Key Ideas Your student can demonstrate understanding of key concepts by working through the following exercises with you.

Lesson	Exercise
7.1	Graph $y = 2 \cdot 5^x + 1$. State the domain and the range.
7.2	A car costs \$12,000. The car depreciates 12% each year. Write an exponential decay model giving the car's value y (in dollars) after t years. Estimate the value after 4 years. Estimate when the value of the car will be \$6300.
7.3	Simplify $3e^{-4} \cdot \frac{10e^9}{2e^3}$. Then use a calculator to evaluate the simplified expression.
7.4	Evaluate the logarithm. Use a calculator if necessary. (a) $\log_3 243$ (b) $\log_{1/4} 64$ (c) $\log 0.6$ (d) $\ln 10$
7.5	Use $\log_5 4 \approx 0.861$ and $\log_5 7 \approx 1.209$ to evaluate the logarithm. (a) $\log_5 \frac{4}{7}$ (b) $\log_5 28$ (c) $\log_5 16$
7.6	A cook removes a casserole from a 425°F oven. The room temperature is 75°F and the cooling rate of the casserole is $r = 0.21$. How long will it take to cool the food to a serving temperature of 100°F ?
7.7	Write an exponential function $y = ab^x$ whose graph passes through (1, 14) and (4, 112). Then write a power function $y = ax^b$ whose graph passes through (5, 1) and (9, 2).

Home Involvement Activity

Directions Using two identical cups, fill both cups with water. Place one outside and the other inside for $\frac{1}{2}$ hour. Take the temperature of both cups of water, then take the inside cup outside and time how long it takes the indoor water to reach the outside temperature. Use this information to estimate the cooling rate of water.

7.1: domain: all real numbers, range: $y > 1$



7.2: $y = 12,000(0.88)^t$; \$7196.34; 5 yr 7.3: $15e^2$; about 110.83584
7.4: (a) 5 (b) -3 (c) -0.2218 (d) 2.3026 7.5: (a) -0.348 (b) 2.070 (c) 1.722
7.6: about 13 min 7.7: $y = 7 \cdot 2^x$; $y = 0.15x^{1.18}$