**58. MULTI-STEP PROBLEM** From 1980 to 2002, the number of quarterly periodicals *P* published in the United States can be modeled by

$$P = 0.138t^4 - 6.24t^3 + 86.8t^2 - 239t + 1450$$

where *t* is the number of years since 1980.

- **a.** *Describe* the end behavior of the graph of the model.
- **b.** Graph the model on the domain  $0 \le t \le 22$ .
- c. Use the model to predict the number of quarterly periodicals in the year 2010. Is it appropriate to use the model to make this prediction? *Explain*.
- 59. TAKS REASONING The weight of Sarus crane chicks S and hooded crane chicks H (both in grams) during the 10 days following hatching can be modeled by the functions

$$S = -0.122t^3 + 3.49t^2 - 14.6t + 136$$

$$H = -0.115t^3 + 3.71t^2 - 20.6t + 124$$

where *t* is the number of days after hatching.

- a. Calculate According to the models, what is the difference in weight between 5-day-old Sarus crane chicks and hooded crane chicks?
- **b. Graph** Sketch the graphs of the two models.
- c. Apply A biologist finds that the weight of a crane chick after 3 days is 130 grams. What species of crane is the chick more likely to be? Explain how you found your answer.



- **60. CHALLENGE** The weight *y* (in pounds) of a rainbow trout can be modeled by  $y = 0.000304x^3$  where *x* is the length of the trout (in inches).
  - **a.** Write a function that relates the weight y and length x of a rainbow trout if *y* is measured in kilograms and *x* is measured in centimeters. Use the fact that 1 kilogram  $\approx$  2.20 pounds and 1 centimeter  $\approx$  0.394 inch.
  - **b.** Graph the original function and the function from part (a) in the same coordinate plane. What type of transformation can you apply to the graph of  $y = 0.000304x^3$  to produce the graph from part (a)?

## **MIXED REVIEW FOR TAKS**

**PRACTICE** at classzone.com

## REVIEW

Lesson 1.3; TAKS Workbook

- **61. TAKS PRACTICE** Amanda starts a business that sells silk-screened shirts. Her overhead costs are \$500, and then she pays an additional \$4.25 per shirt in material costs. If Amanda sells the silk-screened shirts for \$10.50 each, how many shirts must she sell before she can make a profit? TAKS Obj. 4
  - (A) 34

**(B)** 48

**(C)** 80

**(D)** 118

**REVIEW** 

Lesson 2.4; TAKS Workbook

- **62.** TAKS PRACTICE Which equation best represents the line that passes through the point (-4, -3) and is perpendicular to the line shown? TAKS Obj. 7
  - **(F)**  $y = -\frac{4}{3}x$
- **G**  $y = \frac{3}{4}x$
- **(H)**  $y = -\frac{4}{3}x \frac{25}{3}$  **(J)**  $y = \frac{3}{4}x + 1$

