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

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

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 $0 \leq t \leq 22$.
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

$$
\begin{aligned}
S & =-0.122 t^{3}+3.49 t^{2}-14.6 t+136 \\
H & =-0.115 t^{3}+3.71 t^{2}-20.6 t+124
\end{aligned}
$$

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 $y=0.000304 x^{3}$ 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 $y=0.000304 x^{3}$ to produce the graph from part (a)?

## TAKS PRACTICE at classzone.com

## MIXED REVIEW FOR TAKS

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
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) $y=\frac{3}{4} x+1$


