53. CHALLENGE Let $f(x) = x^3$ and $g(x) = x^3 - 2x^2 + 4x$.

a. Copy and complete the table.

b. Use the numbers in the table to complete this statement: As $x \to +\infty$, $\dfrac{f(x)}{g(x)} \to$ _?_ .

c. *Explain* how the result from part (b) shows that the functions f and g have the same end behavior as $x \to +\infty$.

x	$f(x)$	$g(x)$	$\dfrac{f(x)}{g(x)}$
10	?	?	?
20	?	?	?
50	?	?	?
100	?	?	?
200	?	?	?

PROBLEM SOLVING

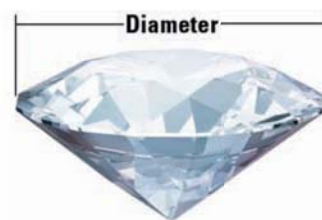**54. DIAMONDS** The weight of an ideal round-cut diamond can be modeled by

$$w = 0.0071d^3 - 0.090d^2 + 0.48d$$

where w is the diamond's weight (in carats) and d is its diameter (in millimeters). According to the model, what is the weight of a diamond with a diameter of 15 millimeters?

Diameter

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55. SKATEBOARDING From 1992 to 2003, the number of people in the United States who participated in skateboarding can be modeled by

$$S = -0.0076t^4 + 0.14t^3 - 0.62t^2 + 0.52t + 5.5$$

where S is the number of participants (in millions) and t is the number of years since 1992. Graph the model. Then use the graph to estimate the first year that the number of skateboarding participants was greater than 8 million.

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56. ◆ MULTIPLE REPRESENTATIONS From 1987 to 2003, the number of indoor movie screens M in the United States can be modeled by

$$M = -11.0t^3 + 267t^2 - 592t + 21{,}600$$

where t is the number of years since 1987.

a. **Classifying a Function** State the degree and type of the function.

b. **Making a Table** Make a table of values for the function.

c. **Sketching a Graph** Use your table to graph the function.

57. SNOWBOARDING From 1992 to 2003, the number of people in the United States who participated in snowboarding can be modeled by

$$S = 0.0013t^4 - 0.021t^3 + 0.084t^2 + 0.037t + 1.2$$

where S is the number of participants (in millions) and t is the number of years since 1992. Graph the model. Use the graph to estimate the first year that the number of snowboarding participants was greater than 2 million.