59. HIGHER EDUCATION Since 1970, the number (in thousands) of males M and females F attending institutes of higher education can be modeled by

$$M = 0.091t^3 - 4.8t^2 + 110t + 5000 \quad \text{and} \quad F = 0.19t^3 - 12t^2 + 350t + 3600$$

where t is the number of years since 1970. Write a model for the total number of people attending institutes of higher education.

TEXAS @HomeTutor for problem solving help at classzone.com

60. ELECTRONICS From 1999 to 2004, the number of DVD players D (in millions) sold in the United States and the average price per DVD player P (in dollars) can be modeled by

$$D = 4.11t + 4.44 \quad \text{and} \quad P = 6.82t^2 - 61.7t + 265$$

where t is the number of years since 1999. Write a model for the total revenue R from DVD sales. According to the model, what was the total revenue in 2002?

TEXAS @HomeTutor for problem solving help at classzone.com

61. BICYCLING The equation $P = 0.00267sF$ gives the power P (in horsepower) needed to keep a certain bicycle moving at speed s (in miles per hour), where F is the force (in pounds) of road and air resistance. On level ground, the equation

$$F = 0.0116s^2 + 0.789$$

models the force F. Write a model (in terms of s only) for the power needed to keep the bicycle moving at speed s on level ground. How much power is needed to keep the bicycle moving at 10 miles per hour?

Animated Algebra at classzone.com

62. MULTI-STEP PROBLEM A dessert is made by taking a hemispherical mound of marshmallow on a 0.5 centimeter thick cookie and covering it with a chocolate shell 1 centimeter thick. Use the diagrams to write two polynomial functions in standard form: $M(r)$ for the combined volume of the marshmallow plus cookie, and $D(r)$ for the volume of the entire dessert. Then use $M(r)$ and $D(r)$ to write a function $C(r)$ for the volume of the chocolate.

Marshmallow on cookie   Chocolate layer added

63. TAKS REASONING From 1997 to 2002, the number of NCAA lacrosse teams for men L_m and women L_w, as well as the average size of a men's team S_m and a women's team S_w, can be modeled by

$$L_m = 5.57t + 182 \quad \text{and} \quad S_m = -0.127t^3 + 0.822t^2 - 1.02t + 31.5$$
$$L_w = 12.2t + 185 \quad \text{and} \quad S_w = -0.0662t^3 + 0.437t^2 - 0.725t + 22.3$$

where t is the number of years since 1997. Write a model for the *total* number of people N on NCAA lacrosse teams. *Explain* how you obtained your model.