29. **GEOMETRY** The maximum number of regions R into which space can be divided by n intersecting spheres is given by $R(n) = \frac{1}{3}n^3 - n^2 + \frac{8}{3}n$. Show that this function has constant third-order differences.

30. **CHALLENGE** A cylindrical cake is divided into the maximum number of pieces p by c planes. When $c = 1, 2, 3, 4, 5$, and 6 the values of $p(c)$ are 2, 4, 8, 15, 26, and 42 respectively. What is the maximum number of pieces into which the cake can be divided when it is cut by 8 planes?

MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

REVIEW
Lesson 3.1;
TAKS Workbook

31. **TAKS PRACTICE** Graph the linear system. What is the solution of the system? *TAKS Obj. 4*

$$-3x - 2y = -8$$
$$2x - y = 10$$

Ⓐ $(-4, -18)$ Ⓑ $(4, -2)$ Ⓒ $(12, 14)$ Ⓓ No solution

REVIEW
Lesson 4.5;
TAKS Workbook

32. **TAKS PRACTICE** The height h above the ground (in feet) of a stuntman falling from a window is given by $h = -16t^2 + 90$ where t is the time (in seconds). An air cushion that is 9 feet high is positioned on the ground below the window. About how many seconds will the stuntman fall before he hits the air cushion? *TAKS Obj. 5*

Ⓕ 2.25 sec Ⓖ 2.37 sec Ⓗ 8.66 sec Ⓙ 9.48 sec

QUIZ *for Lessons 5.7–5.9*

Find all zeros of the polynomial function. *(p. 379)*

1. $f(x) = x^3 - 4x^2 - 11x + 30$

2. $f(x) = 2x^4 - 2x^3 - 49x^2 + 9x + 180$

Write a polynomial function f of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros. *(p. 379)*

3. $-4, -1, 2$

4. $4, 1 + i$

5. $-3, 5, 7 + \sqrt{2}$

6. $1, -2i, 3 - \sqrt{6}$

Graph the function. *(p. 387)*

7. $f(x) = -(x - 3)(x - 2)(x + 2)$

8. $f(x) = 3(x - 1)(x + 1)(x - 4)$

9. $f(x) = x(x - 4)(x - 1)(x + 2)$

10. $f(x) = (x - 3)(x + 2)^2(x + 3)^2$

Write a cubic function whose graph passes through the given points. *(p. 393)*

11. $(-5, 0), (-2, 0), (1, 9), (2, 0)$

12. $(-1, 0), (0, 16), (2, 0), (4, 0)$

13. **DRIVE-INS** The table shows the number of U.S. drive-in movie theaters for the years 1995 to 2002. Find a polynomial model that fits the data. *(p. 393)*

Years since 1995, t	0	1	2	3	4	5	6	7
Drive-in movie theaters, D	848	826	815	750	737	667	663	634