Name

11-2B Lesson Master

Questions on SPUR Objectives
See Student Edition pages 792–795 for objectives.

SKILLS Objective A

In 1–8, expand by hand and write in standard form. Check with a CAS.

1. $3x^2(x^2 - 5x + 2)$

2. $(2x + 3)(x^2 - x + 2)$

3. $(a - 3)(2a^3 - 3a^2)$

4. $(r^4 - 1)(r^3 - 4r + 3)$

5. $(7 - c)^2(2 - c)$

6. $(4p + q - 7)(p + q + 1)$

7. $(x + 5)(x + 3)(x - 1)$

8. $(x - a)(x - b)(x - c)$

In 9–11, find the given terms in the standard-form expansion of each polynomial without actually doing the expansion. Check by expanding with a CAS.

9. $(3a - 2)(2a - 1)(a + 1)$ First term: _____ Last term: _____

10. $(x^2 + 5)(x + 3)(2x^3 + 6)$ First term: _____ Term with x^3: _____

11. $(n^2 - 3)(4n + 2)(-\frac{1}{2}n - 8)$ First term: _____ Term with n^2: _____

PROPERTIES Objective E

In 12–15, determine a. whether the polynomial is a *monomial*, *binomial*, *trinomial*, or *none of these*, and b. the degree of the polynomial.

12. $3x^2 + 2x - 5$
a. _____ b. _____

13. $y^7 - y^3$
a. _____ b. _____

14. x^{17}
a. _____ b. _____

15. $m^5 + 2m^4 - 8m^3 + m - 1$
a. _____ b. _____

In 16–19, give examples of polynomials that meet the description.

16. third-degree monomial: _____

17. second-degree binomial: _____

18. first-degree monomial: _____

19. fifth-degree trinomial: _____

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USES Objective I

20. From a sheet of notebook paper 26.7 cm by 20.3 cm, squares of side x are removed from each corner, forming an open box.

a. In the space at the right, sketch a diagram of this situation.

b. Write a formula for the volume $V(x)$ of the box.

_____

c. Write a formula for its surface area $S(x)$.

_____

21. The height h of a square prism is 4 in. greater than an edge s of the base. Give the volume in terms of s, in standard form. Use the formula for the volume of a square prism: $V = s^2h$.

_____

22. A food manufacturer wants a can with the largest possible volume using 30 in^2 of metal.

a. The surface area of a cylinder is $2\pi r^2 + 2\pi h = 2\pi r(r + h)$. Solve the equation $2\pi r(r + h) = 30$ for h in terms of r.

_____

b. Write a polynomial in terms of r for the volume of the can. Use the formula for the volume of a cylinder: $V = \pi r^2 h$.

_____

c. Graph the volume of the can as a function of the radius at the right. Use the graph to find the dimensions that maximize the volume.

$r =$ _____

$h =$ _____

$V =$ _____