Name

11-3A Lesson Master

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

SKILLS Objective B

In 1–15, work by hand to factor over the rational numbers (if possible). If it is not factorable, write "prime over the rational numbers." Check by expanding or by using a CAS if necessary.

In 1–3, factor out the greatest common monomial factor.

1. $14x^3 - 49x =$ _____

2. $30nm^2 + 10nm - 15m =$ _____

3. $8a^3b^2 - 12a^2b^3 + 24ab^2 =$ _____

In 4 and 5, factor as a difference of squares.

4. $x^2 - 121 =$ _____

5. $16a^2 - 25b^2 =$ _____

In 6 and 7, factor as the square of a binomial.

6. $x^2 - 14x + 49 =$ _____

7. $p^2 + 8pq + 16q^2 =$ _____

In 8 and 9, factor by considering the factors of the constant term.

8. $x^2 + 8x + 12 =$ _____

9. $t^2 - t - 30 =$ _____

In 10–15, use one or more of the above methods.

10. $3x^3 - 27x =$ _____

11. $2a^2 - 10a + 8 =$ _____

12. $x^3 - 10x^2 + 25x =$ _____

13. $y^2 + 3y - 10 =$ _____

14. $x^2 - x + 3 =$ _____

15. $t^6 + 4t^5 + 4t^4 =$ _____

16. a. Factor $x^4 - 16$ as a difference of squares. _____

    b. One of the terms in your answer to Part a is also a difference of squares. Use this fact to completely factor $x^4 - 16$ over the rationals. _____

PROPERTIES Objective E

In 17–19, use a CAS as needed to help answer the question.

17. Consider the polynomial $P(x) = x^2 - 2x - 2$.

    a. Is $P(x)$ prime over the integers? If not, factor it. _____

    b. Is $P(x)$ prime over the reals? If not, factor it. _____

18. For which integers n from 1 to 10 is $x^2 - n$ prime over the integers? _____

19. Factor $x^2 + 9$ over each set, if possible.

    a. the rational numbers: _____ b. the real numbers: _____