

8-6
EXERCISES

Chapter 8
Factoring Polynomials

Homework Help Online

Online Support for Lesson 8-6 Homework

GUIDED PRACTICE

Click a video icon to see a Lesson Tutorial Video. Click a pencil icon to practice similar problems.



VIDEO

See Example 1

Tell whether each polynomial is completely factored. If not, factor it.

- | | | |
|-----------------------|--------------------------|-------------------------|
| 1. $3x(9x^2 + 1)$ | 2. $2(4x^3 - 3x^2 - 8x)$ | 3. $2k^2(4 - k^3)$ |
| 4. $(2x + 3)(3x - 5)$ | 5. $4(4p^4 - 1)$ | 6. $a(a^3 + 2ab + b^2)$ |



PRACTICE



VIDEO

See Example 2

Factor each polynomial completely. Check your answer.

- | | | |
|-------------------|-----------------------|--------------------------|
| 7. $3x^5 - 12x^3$ | 8. $4x^3 + 8x^2 + 4x$ | 9. $8pq^2 + 8pq + 2p$ |
| 10. $18rs^2 - 2r$ | 11. $mn^5 - m^3n$ | 12. $2x^2y - 20xy + 50y$ |



PRACTICE



VIDEO

See Example 3

13. $6x^4 - 3x^3 - 9x^2$

14. $3y^2 + 14y + 4$

15. $p^5 + 3p^3 + p^2 + 3$

16. $7x^5 + 21x^4 - 28x^3$

17. $2z^2 + 11z + 6$

18. $9p^2 - q^2 + 3p + q$



PRACTICE

PRACTICE AND PROBLEM SOLVING

Click a video icon to see a Lesson Tutorial Video. Click a lightbulb icon to see a complete solution.



VIDEO

Tell whether each polynomial is completely factored. If not, factor it.

19. $2x(y^3 - 4y^2 + 5y)$

20. $2r(25r^6 - 36)$

21. $3n^2(n^2 - 25)$

22. $2m(m + 1)(m + 4)$

23. $2y^2(4x^2 + 9)$

24. $4(7g + 9h^2)$



VIDEO

Factor each polynomial completely. Check your answer.

25. $-4x^3 + 24x^2 - 36x$

26. $24r^2 - 6r^4$

27. $5d^2 - 60d + 135$

28. $4y^8 + 36y^7 + 81y^6$

29. $98x^3 - 50xy^2$

30. $4x^3y - 4x^2y - 8xy$



VIDEO

31. $5x^2 - 10x + 14$

32. $121x^2 + 36y^2$

33. $p^4 - 16$

34. $4m^6 - 30m^5 + 36m^4$

35. $2k^3 + 3k^2 + 6k + 9$

36. $ab^4 - 16a$



SOLUTION

Write an expression for each situation. Factor your expression.

37. the square of Ella's age plus 12 times Ella's age plus 36



39. the square of the number of seconds Bob can hold his breath minus 16 times the number of seconds plus 28



41. the square of Beth's score minus 49



Factor and simplify each expression.

45. $(2x + 3)^2 - (x - 4)^2$



47. $(3x - 5)^2 - (y + 2)^2$



SOLUTION

Math History Use the following information for Exercises 52–54.

The triangle at right is called *Pascal's Triangle*. The triangle starts with 1 and each of the other numbers in the triangle is the sum of the two numbers in the row above it.

0						1						
1						1		1				
2					1		2		1			
3				1		3		3		1		
4			1		4		6		4		1	
5		1		5		10		10		5		1

Pascal's Triangle can be used to write the product of a binomial raised to an integer power. The numbers in each row give you the coefficients of each term in the product.

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

The numbers in row 3 are 1, 3, 3, 1. These are the coefficients of the terms in the product $(a + b)^3$. The power of a decreases in each term and the power of b increases in each term.

Use the patterns you see in Pascal's Triangle to write the power of the binomial $a + b$ given by each product.

53. $a^8 + 8a^7b + 28a^6b^2 + 56a^5b^3 + 70a^4b^4 + 56a^3b^5 + 28a^2b^6 + 8ab^7 + b^8 = (a + b)^{\square}$