8-7: FACTORING SPECIAL CASES

Lesson Objectives:

- *Factoring perfect square trinomials*
- *Factoring the difference of two squares*

EXAMPLE 1: FACTORING A PERFECT SQUARE TRINOMIAL WITH a=1

Factor.

1. $x^2+8x+16$
2. $x^2+24x+144$
3. $m^2-28m+196$
4. $a^2+26a+169$

5. x^2+4y+4
6. g^2-2g+1
7. $x^2-22x+121$
8. $x^2+25x+100$

EXAMPLE 2: FACTORING A PERFECT SQUARE TRINOMIAL WITH $a \neq 1$

Factor.

9. $4x^2+12x+9$
10. $4x^2-20x+25$
11. $9n^2+12n+4$
12. $4x^2-60x+225$

13. $9x^2+60x+100$
14. $16m^2-72m+81$
15. $16x^2-8x+1$
16. $25b^2+60b-36$

17. $36x^2 - 84x + 49$ 18. $9x^2 + 12x - 4$ 19. $25x^4 + 40x^2y + 16y^4$ 20. $x^2 + 20x + 64$

EXAMPLE 3: FACTORING THE DIFFERENCE OF TWO SQUARES FOR a=1
Factor.

21. $x^2 - 81$ 22. $x^2 - 64$ 23. $m^2 - 36$ 24. $x^2 + 9$

25. $x^2 - 100$ 26. $x^2 - 25$ 27. $m^2 - 225$ 28. $x^2 - 1$

EXAMPLE 4: FACTORING THE DIFFERENCE OF TWO SQUARES FOR $a \neq 1$
Factor.

29. $16x^2 - 49$ 30. $4x^2 - 121$ 31. $9v^2 - 4$ 32. $25x^2 - 64$

33. $4w^2 - 81$ 34. $100y^2 - 121$ 35. $4b^2 - 169$ 36. $16x^2 - 9$

FACTORING COMPLETELY

1.

2.

a)

b)

3.

a)

b)

4.

5.

EXAMPLE 5: FACTORING OUT THE GCF FIRST
Factor completely.

37. $10x^2 - 40$ 38. $8y^2 - 50$ 39. $3c^2 - 75$ 40. $28k^2 - 7$

Factor completely.

41. $4x^2 + 24x + 36$ 42. $50x^2 - 162y^2$ 43. $50x^2 - 80x + 32$ 44. $x^8 - 256$

Name _____ ***8-7 Practice Worksheet*** Period _____

Factor.

1. $h^2+12h+36$
2. $t^2-14t+49$
3. $100v^2-220v+121$
4. k^2-196
5. m^2-225
6. y^2-900
7. $9c^2-64$
8. $144p^2-1$
9. $25w^2-196$
10. $3x^2+48x+192$
11. $7h^2-56h+112$
12. $3m^2-12$
13. $6r^3-150r$
14. $16p^2-48pq+36q^2$
15. $28c^2+140cd+175d^2$
16. $x^2+x+\frac{1}{4}$
17. $64g^2-192gh+144h^2$
18. $\frac{1}{9}n^2-\frac{1}{25}$
19. $\frac{1}{25}k^2+\frac{6}{5}k+9$
20. $36m^4+84m^2+49$
21. $108m^6-147$
22. $x^{20}-4x^{10}y^5+4y^{10}$
23. $45x^4-60x^2y+20y^2$
24. $37g^8-37h^8$

The area of a square is given. Find the length of one of the sides of the square.

25. $49d^2+28d+4$

The expression $(t-3)^2-16$ is a difference of two squares.

26. Identify *a* and *b*.
27. Factor $(t-3)^2-16$.

The binomial $16-81n^4$ can be factored twice as the difference of two squares.

28. Factor $16-81n^4$ completely.
29. What characteristics do 16 and $81n^4$ share that make this possible?
30. Write a binomial that can be factored twice as the difference of two squares.

MIXED REVIEW

Is each number a solution of the given inequality (*not multiple choice; answer each letter yes/no*)?

31. $4z + 7 \geq 15$

a) -2 b) 2 c) 5

32. $-2g + 3 > 5$

a) -3 b) -1 c) 4

Solve each inequality. Graph the solution.

33. $z + 7 < 9$

34. $-5 + 4r \geq 3$

35. $5w > -6w + 11$

36. $4 + 3n \geq 1$ or $-5n > 25$

37. $10k < 75$ and $4 - k \leq 0$

38. $|4k - 2| = 11$