

Algebra 2
Notes Section 4.4 Day 2
Factoring Quadratic Expressions

Name: _____
Date: _____ Hour: _____

Factoring $ax^2 + bx + c$ when $a \neq 1$. Factoring by grouping.

1. Find 2 numbers that multiply to give you ac and add to give you b .
2. Rewrite b as these two numbers with the variable.
3. Take the GCF out of the 1st two terms and take the GCF out of the last two terms.
4. Take out the common parenthesis (if your parentheses are not the same you have done something wrong)
5. CHECK YOUR ANSWER!!

Trial and error

1. $6x^2 - 5x - 4$

$$\begin{aligned} & \cancel{(3x - 2)(2x + 2)} \\ & \underline{(3x - 4)(2x + 1)} \\ & \quad -3x + 8x \end{aligned}$$

Factoring by Grouping

a.c = $6(-4) = -24$ $(6)x^2 - 5x(-4)$
 1, 2, (3), (8), 12, 24
 $6x^2 + 3x - 8x - 4$
 $3x(2x + 1) - 4(2x + 1)$
 $(2x + 1)(3x - 4)$

2. $6x^2 - 17x + 10$

$$\begin{aligned} & \underline{(6x - 5)(x - 2)} \\ & 6x^2 - 12x - 5x + 10 \\ & 6x^2 - 17x + 10 \end{aligned}$$

a.c $6x^2 - 17x + 10$
 $6 \cdot 10 = 60$
 1, 2, 3, 4, (5) (12), 15, 20, 30, 60
 $6x^2 - 5x - 12x + 10$
 $x(6x - 5) - 2(6x - 5)$
 $(6x - 5)(x - 2)$

3. $4x^2 + 47x - 12$

$$\begin{aligned} & (x + 12)(4x - 1) \\ & 4x^2 - x + 48x - 12 \\ & 4x^2 + 47x - 12 \end{aligned}$$

a.c
 $4(-12) = -48$
 $4x^2 + 47x - 12$
 $4x^2 + 48x - 1x - 12$
 $4x(x + 12) - 1(x + 12)$
 $(x + 12)(4x - 1)$

4-4

Practice

Form G

Factoring Quadratic Expressions

Factor each expression.

1. $x^2 + 11x + 28$

2. $x^2 + 11x + 24$

3. $s^2 + 13s + 42$

4. $x^2 - 10x + 21$

5. $y^2 - 8y + 15$

6. $x^2 - 12x + 32$

7. $-x^2 + 9x - 18$

$-1(x^2 - 9x + 18)$

$-1(x-6)(x-3)$

8. $-w^2 + 12w - 35$

9. $-t^2 - 3t + 54$

10. $x^2 - 7x - 60$

Find the GCF of each expression. Then factor the expression.

11. $6x^2 - 9$

12. $16m^2 + 8m$

13. $2a^2 + 22a + 60$

14. $5x^2 + 25x - 70$

Factor each expression.

17. $5x^2 - 17x + 6$

18. $3x^2 + 10x + 8$

19. $2b^2 - 9b - 5$

20. $z^2 + 12z + 36$

21. $9x^2 - 6x + 1$

22. $4k^2 + 12k + 9$

23. $n^2 - 49$

24. $2x^2 - 50$

25. The area of a rectangular field is $x^2 - x - 72$ m². The length of the field is $x + 8$ m.
What is the width of the field in meters?

Factor each expression completely.

28. $2x^2 + 9x + 10$

29. $6y^2 - 5y + 1$

30. $3x^2 + 8x - 3$

31. $4x^2 - 7x - 15$