

HW #5 - Due Tuesday, 9/15:

5.1 #63-85 odd

HW #6 - Due Wednesday, 9/16:

5.2 #3-7odd, 15-25odd, 35-49odd

HW #7 - Due Tuesday, 9/22:

5.3 #25-29odd, 43-51odd, 61-67odd, 89-97odd, 109-117odd

HW #8 - Due Friday, 9/25?

5.4 #19-25 odd; 27-43 odd; 55-61 odd

5.5 #21-47 odd

HW #9 - Due Tuesday, 9/29?

5.6 #3-131 odd

5.7 #35-49 odd, 51-57 odd, 61-75odd

Test 3 - Tuesday, 9/29?

Ch 5 - Exponential Expressions & Polynomials

5.1 - Exponential Expressions

5.2 - Intro to Polynomials

5.3 - Multiplying Polynomials

5.4 - Dividing Polynomials

5.5 - Factoring

5.6 - Special Factoring

5.7 - Solving Equations by Factoring

Factor trinomials of the form ax^2+bx+c

When $a=1$, we look for factors of c that sum to b .

When a is any constant other than 1, we will

- look for factors of $c \cdot a$ that sum to b ,
- rewrite bx as a sum of two terms whose coefficients are those factors,
- factor by grouping.

$$100. \quad 6x^2 + 41xy - 7y^2 \quad 6(-7) = -42$$

$$= 6x^2 + 42xy - 1xy - 7y^2$$

$$= 6x(x + 7y) - y(x + 7y)$$

$$= (x + 7y)(6x - y)$$

$$106. \quad 6 - 7x - 5x^2 \quad 6(-5) = -30$$

$$= 6 - 10x + 3x - 5x^2$$

$$= 2(3 - 5x) + x(3 - 5x)$$

$$= (3 - 5x)(2 + x)$$

$$114. \quad 8a^4 + 37ab^3 - 15ab^2$$

$$= a^2 [8a^2 + 37ab - 15b^2]$$

$$= a^2 [8a^2 + 40ab - 3ab - 15b^2]$$

$$= a^2 [8a(a+5b) - 3b(a+5b)]$$

$$= \boxed{a^2(a+5b)(8a-3b)}$$

$$8(-15) = -120$$

$$2 \cdot 2 \cdot 2 \cdot \textcircled{3} \cdot 5$$

$$\cancel{4 \cdot 30}$$

$$\cancel{2 \cdot 60}$$

$$3 \cdot 40 \checkmark$$

$$122. \quad 2a^2b^4 + 9ab^3 - 18b^2$$

$$= b^2(2a^2b^2 + 9ab - 18)$$

$$= b^2(2a^2b^2 + 12ab - 3ab - 18)$$

$$= b^2[2ab(ab+6) - 3(ab+6)]$$

$$= \boxed{b^2(ab+6)(2ab-3)}$$

$$2(-18) = -36$$

$$2 \cdot 2 \cdot 9$$

$$\underbrace{2 \cdot 2 \cdot 3 \cdot 3}$$

$$136. X^{3n} + 10X^{2n} + 16X^n$$

$$X^n X^m = X^{n+m}$$

$$= X^n (X^{2n} + 10X^n + 16)$$

$$= X^n (X^{2n} + 8X^n + 2X^n + 16)$$

$$= X^n [X^n (X^n + 8) + 2(X^n + 8)]$$

$$= \boxed{X^n (X^n + 8) (X^n + 2)}$$

$$96. 10x^2 - 29x + 10$$

$$10(10) = 100$$

$$= \underbrace{10x^2 - 25x} - \underbrace{4x + 10}$$

$$= 5x(2x - 5) - 2(2x - 5)$$

$$= (2x - 5)(5x - 2)$$

$$98. \quad 4x^2 - 6x + 1$$

not factorable (over the integers)

5.6

Special Factoring

$$a^2 - b^2 = (a+b)(a-b)$$

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

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

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

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

$$a^3 + b^3 \neq (a+b)^3$$

$$\begin{aligned} & \text{''} \\ & (a+b)(a+b)(a+b) \\ & = (a+b)(a^2 + 2ab + b^2) \\ & = a^3 + 3a^2b + 3ab^2 + b^3 \end{aligned}$$

↑
you'll learn
in precal

$$\begin{aligned} \frac{5.6}{12}. \quad a^2b^2 - 25 \\ = (ab)^2 - 5^2 \\ = (ab - 5)(ab + 5) \end{aligned}$$

$$\begin{aligned} x^2 - y^2 &= (x - y)(x + y) \\ x^3 + y^3 &= (x + y)(x^2 - xy + y^2) \end{aligned}$$

$$42. \quad 64a^3 + 27$$

$$= (4a)^3 + (3)^3 = \boxed{(4a + 3)(16a^2 - 12a + 9)}$$

$$\begin{array}{ccc} (4a)^2 & 4a(3) & 3^2 \\ \downarrow & \downarrow & \downarrow \end{array}$$

$$\begin{aligned} 16. \quad 4x^2y^2 + 12xy + 9 \\ = (2xy)^2 + 2(2xy)(3) + (3)^2 \\ = (2xy + 3)^2 \end{aligned}$$

$$\begin{aligned} a^2 + 2ab + b^2 &= (a + b)^2 \\ a^2 - 2ab + b^2 &= (a - b)^2 \end{aligned}$$

$$\begin{aligned} 22. \quad b^2 - 18b + 81 \\ = b^2 - 2(b)(9) + 9^2 \\ = (b - 9)^2 \end{aligned}$$