

W-UPS: Tx+bK P.542
 (25, 26, 29, 45, 46, 48, 49)
 Find the GCF of the terms of each polynomial. Then factor the polynomial.

25. $9x^4 + 12x^3 + 6x$ 26. $4r^5 - 12r^3 + 8r^2$

~~3~~ ~~3~~ ~~xxx~~ + ~~4~~ ~~3~~ ~~xxx~~ + ~~3~~ ~~2~~ ~~x~~ ~~4~~ ~~2~~ ~~2~~ ~~3~~

$3x(3x^3 + 4x^2 + 2)$ $4r^2(r^3 - 3r + 2)$

GCF LEFTOVERS $4r^2(r^3 - 3r + 2)$

29. $3d^2 - 6d$

~~1~~ ~~3~~ ~~d~~ ~~2~~ - ~~2~~ ~~3~~ ~~d~~

$3d(d - 2)$ $4t^2(t^3 - 3t + 2)$

Simplify each product. Write in standard form.

45. $(q - 4)(q - 4)$ 46. $(2k^3 + 5)^2$

$(2k^3 + 5)(2k^3 + 5)$

48. $(2m^2 + 5)(2m^2 - 5)$ 49. $(w - 4)(w + 4)$

$(2m - 3)(3m + 7)$

$6m^2 + 14m - 9m - 21$

$6m^2 + 5m - 21$

Name _____ B 1/7

Turn-In when finished

Get a Final Exam Review
 (PUT YOUR NAME ON IT!) Packet

We will go over HW when everyone is finished

Lesson 9-7

WKbk p.170

Lesson Objectives

- Factor perfect-square trinomials
- Factor the difference of squares

Day 80

Perfect-Square Trinomials

For every real number a and b :

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

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

Examples

$$x^2 + 10x + 25 = (x + 5)(x + 5) = (x + 5)^2$$

$$x^2 - 10x + 25 = (x - 5)(x - 5) = (x - 5)^2$$

$$\sqrt{x^2} = x$$

$$\sqrt{25} = 5$$

Difference of Two Squares

5 · X · 2

For every real number a and b :

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

$$\sqrt{a^2} = a$$

$$\sqrt{b^2} = b$$

Examples

$$x^2 - 81 = (x + 9)(x - 9)$$

$$16x^2 - 49 = (4x + 7)(4x - 7)$$

$$\sqrt{x^2} = x$$

$$\sqrt{81} = 9$$

opposite signs

$$\sqrt{16x^2} = 4x$$

$$\sqrt{49} = 7$$

Example

Factoring a Perfect-Square Trinomial with $a = 1$ Factor $m^2 - 6m + 9$.

$$(m - 3)(m - 3)$$

$$(m - 3)^2$$

$$\begin{array}{r} 9 \\ -3 \overline{) -3} \end{array}$$

Quick Check

1. Factor each expression.

a. $x^2 + 8x + 16$

$$(x + 4)(x + 4)$$

$$(x + 4)^2$$

$$\begin{array}{r} 16 \\ 4 \overline{) 4} \end{array}$$

b. $n^2 + 16n + 64$

$$(n + 8)(n + 8)$$

$$(n + 8)^2$$

$$\begin{array}{r} 64 \\ 8 \overline{) 8} \end{array}$$

c. $n^2 - 16n + 64$

$$(n - 8)(n - 8)$$

$$(n - 8)^2$$

$$\begin{array}{r} 64 \\ -8 \overline{) -8} \end{array}$$

Examples

Factoring a Perfect-Square Trinomial with $a \neq 1$ The area of a square is $(16h^2 + 40h + 25)$ in². Find the length of a side.

$$\sqrt{16h^2} = 4h$$

$$\sqrt{25} = 5$$

$$4h \cdot 5 \cdot 2 = 40h$$

$$(4h + 5)^2$$

$$(4h + 5)(4h + 5)$$

The Difference of Two Squares for $a = 4$ Factor $a^2 - 16$.

$$a^2 - 16 = (a + 4)(a - 4)$$

$$\sqrt{a^2} = a$$

$$\sqrt{16} = 4$$

Quick Check

2. Factor each expression.

a. $9g^2 - 12g + 4$

$$\sqrt{9g^2} = 3g$$

$$\sqrt{4} = 2$$

$$(3g - 2)^2$$

b. $4t^2 + 36t + 81$

$$\sqrt{4t^2} = 2t$$

$$\sqrt{81} = 9$$

$$(2t + 9)^2$$

c. $4t^2 - 36t + 81$

$$(2t - 9)^2$$

3. Factor each expression. Check your answer.

a. $x^2 - 36$

b. $m^2 - 100$

$(x+6)(x-6)$ $(m+10)(m-10)$

c. $p^2 - 49$

$(p+7)(p-7)$

Examples

4 The Difference of Two Squares for $a \neq 1$ Factor $9b^2 - 25$.

$9b^2 - 25 = (3b+5)(3b-5)$

$\sqrt{9b^2} = 3b$

$\sqrt{25} = 5$

5 Factoring Out a Common Factor Factor $5x^2 - 80$.

4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, ...

$5x^2 - 5 \cdot 16$

GCF $5(x^2 - 16)$

$5(x+4)(x-4)$

Quick Check

4. Factor each expression.

a. $9v^2 - 4$

b. $25x^2 - 64$

$(3v+2)(3v-2)$ $(5x+8)(5x-8)$

c. $4w^2 - 49$

$(2w+7)(2w-7)$

5. Factor each expression.

a. $8y^2 - 50$

b. $3c^2 - 75$

$2 \cdot 4y^2 - 2 \cdot 25$

$3c^2 - 3 \cdot 25$

$2(4y^2 - 25)$
 $2(2y+5)(2y-5)$

$3(c^2 - 25)$

$3(c+5)(c-5)$

c. $28k^2 - 7$

$7 \cdot 4k^2 - 7 \cdot 1$

$7(4k^2 - 1)$

$7(2k+1)(2k-1)$

WKbK p.425

(1-3, 5-8, 11-13, 15-26)