



5.4 Special Factoring

- Need To Know

- Recall some formulas
- Factoring the difference of two squares
- Factoring perfect square trinomials



Formulas From Poly Multiplication

Formulas to Remember

$$(x + y)(x - y) = x^2 - y^2$$

$$(x + y)^2 = x^2 + 2xy + y^2$$

$$(x - y)^2 = x^2 - 2xy + y^2$$



Factoring a Difference of Squares

Factor:

$$9x^2 - 25$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring a Difference of Squares

Factor:

$$49x^2 - 1$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring a Difference of Squares

Factor:

$$x^2 + 25$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + y^2 \text{ is prime}$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring a Difference of Squares

Factor:

$$a^4 - b^4$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + y^2 \text{ is prime}$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring Perfect Square Trinom.

Factor:

$$m^2 + 12m + 36$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + y^2 \text{ is prime}$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring Perfect Square Trinom.

Factor:

$$4x^2 + 12x + 9$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + y^2 \text{ is prime}$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



Factoring Perfect Square Trinom.

Factor:

$$6x^2 - 24x + 24$$

Formulas to Know

$$x^2 - y^2 = (x + y)(x - y)$$

$$x^2 + y^2 \text{ is prime}$$

$$x^2 + 2xy + y^2 = (x + y)^2$$

$$x^2 - 2xy + y^2 = (x - y)^2$$



5.4 Conclusion

Ways to Factor Polynomial

1. By Greatest Common Factor (GCF)
2. By Grouping
3. Factor Trinomials
 - Guess, check and revise
4. Factoring with Formulas

- $x^2 - y^2 = (x + y)(x - y)$

- $x^2 + y^2$ is prime

- $x^2 + 2xy + y^2 = (x + y)^2$

- $x^2 - 2xy + y^2 = (x - y)^2$