Chapter 8: Factoring polynomials

SECTION 8.2: GREATEST COMMON FACTOR, FACTOR BY GROUPING

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x^2+2x

- Factors of polynomials are not always binomials
- $(x \cdot x)+(2 \cdot x)$
- There is a common factor to each term: x
- $(x \cdot x)+(2 \cdot x)=x(x+2)$ ‘undistribute’
- Always look for common factors

Find common factors in each expression

- $3x+21$
- $8x^2-6x$
- $6x^3+12x^2$
- $20x^2+35x$
- $14x^3-21x^2$

Some trinomials have terms with common factors

- $2x^2+14x+24$
- $36x+4x^3-24x^2$
- Write in rank order!!

Sometimes you aren't done when you think you are!

- $4x^2-36$
- $4(x^2-9)$
- $4(x-3)(x+3)$

Polynomial with ‘opposite’ factor

- $-5x^2+30x-40$
- $-5(x^2-6x+8)$
- Because it’s really hard to keep track of leading negative when factoring binomial
- $-5(x-4)(x-2)$

Polynomial with ‘opposite’ factor

- $-x^2+49$
- $-1(x^2-49)$ is easier to factor
- Difference of two squares
- Recognize it: know solution!!

Factor by grouping

- $10x^2-5x+6x-3$
- $(10x^2-5x)+(6x-3)$
- $5x(2x-1)+3(2x-1)$
- Not yet completely factored!
- $(5x+3)(2x-1)$
- Check by FOIL or calculator table

Factor by grouping

- Sometimes you can break middle term into a sum to factor by grouping
- $3x^2+11x+8$
- $3x^2+3x+8x+8$
- $(3x^2+3x)+(8x+8)$
- $3x(x+1)+8(x+1)$
- $(3x+8)(x+1)$

Factor by grouping

- Sometimes you can break middle term into a sum to factor by grouping
- $3x^2+14x+8$
- $3x^2+12x+2x+8$
- $(3x^2+12x)+(2x+8)$
- $3x(x+4)+2(x+4)$
- $(3x+2)(x+4)$