Section 6.1
Greatest Common Factor (GCF) and Factoring by Grouping

Writing a polynomial as the product of two or more simpler polynomials is called factoring the polynomial.

\[3x(5x - 2) = 15x^2 - 6x \text{ Multiplying} \]

\[15x^2 - 6x = 3x(5x - 2) \text{ Factoring} \]

Factoring “undoes” or reverses, multiplying.

The first step in factoring any polynomial is to factor out the greatest common factor.

15y - 60

9 + 18m

5h^2j – 7hj

15y^3z^3 + 27y^2z^4 – 36yz^5
\[-50r^4t^2 + 81x^3y^3 - 49p^2q^4\]

\[(z - 5)(z + 7) + (z - 5)(z + 9)\]

\[3(5 - x)^4 + 2(5 - x)^3 - (5 - x)^2\]

\[t^4 + 8t^3 - 12t\]
Factor by grouping.

2k + 2h + jk + jh

3ma + 3mb + 2ab + 2b^2

8xy + 12x^2 + 10y + 15x

x^3y^2 − 3 − 3y^2 + x^3

Factor out the variable that is raised to the lesser exponent.

k^{-2} + 2k^{-4}