Section 7.2 Factoring Trinomials of the Form $x^{2}+bx+c$

# Objective 1: Factoring Trinomials of the Form $x^{2}+bx+c$

Consider the quadratic expression $x^{2}+3x-10$. Since $\left(x-2\right)\left(x+5\right)=x^{2}+3x-10$, we say that $(x-2)(x+5)$ is a **factored form** of $x^{2}+3x-10$.

The factored form of a quadratic expression is the product of two linear factors and possibly a constant. If a quadratic expression cannot be factored over the integers, then we say that it is **prime**.

Factor each trinomial or state that the expression is prime.

|  |  |
| --- | --- |
| a. $x^{2}+5x+6$ | b. $m^{2}-17m+70$ |

|  |  |
| --- | --- |
| c. $a^{2}-2a-48$ | d. $x^{2}+2x-10$ |

|  |  |
| --- | --- |
| e. $x^{2}+xy-12y^{2}$ | f. $16b+15+b^{2}$ |

# Objective 2: Factoring Out the Greatest Common Factor

Recall from section 7.1 that the first step to factoring any polynomial is to factor out the greatest common factor if there is one (other than $1$ or $-1$).

Factor each expression completely.

|  |  |
| --- | --- |
| a.$ 5t^{2}-60t+160$  | b. $3y^{3}-18y^{2}-21y$ |

If the leading coefficient is negative, factoring out a $-1$ first makes the expression easier to factor.

c. $-x^{2}+9x-14$