Section 1.6b Other Types of Equations

Objective 2: Solving Equations that are Quadratic in Form ("Disguised Quadratics")

Quadratic equations of the form $ax^2+bx+c=0,\ a\neq 0$ are relatively straight-forward to solve since we know several methods for solving quadratics. Sometimes equations that are not quadratic can be made into a quadratic equation by using a **substitution**. Equations of this type are said to be *quadratic in form* or *"disguised quadratics"*. These equations typically have the form $au^2+bu+c=0, a\neq 0$ after an appropriate substitution.

Original Equation	**Identify *u*.**	**Find u^2.**	**Make the substitutions.**
$2x^4-11x^2+12=0$	$u=x^2$	$u^2=(x^2)^2=x^4$	$2u^2-11u+12=0$
$\left(\frac{1}{x-2}\right)^2+\frac{3}{x-2}-15=0$	$u=\frac{1}{x-2}$	$u^2=\left(\frac{1}{x-2}\right)^2$	$u^2+3u-15=0$
$x^{2/3}-9x^{1/3}+8=0$	$u=x^{1/3}$	$u^2=(x^{1/3})^2=x^{2/3}$	$u^2-9u+8=0$
$3x^{-2}-5x^{-1}-2=0$	$u=x^{-1}$	$u^2=(x^{-1})^2=x^{-2}$	$3u^2-5u-2=0$