11.4 Equations in Quadratic Form

We can sometimes rewrite non-quadratic equations as quadratics by making a substitution or "change of variable" as it is more formally referred to. Essentially, we choose a value such as $u = x^2$ and change the variables from x to u where we can. If done correctly, your new equation should look like a normal quadratic equation, but only have u as the variable, not x.

Example 11.4.1
Rewrite $x^4 - 10x^2 + 9 = 0$ as a quadratic.

Example 11.4.2
Rewrite $5x^{2/3} + 11x^{1/3} + 2 = 0$ as a quadratic.

Example 11.4.3
Solve $x^4 - 5x^2 + 6 = 0$.

Example 11.4.4
Solve $x - 2\sqrt{x} - 8 = 0$. Be sure to check your answers.

Example 11.4.5
Solve $(x^2-4)^2+(x^2-4)-6=0$.

Example 11.4.6
Solve $2x^{-2}+x^{-1}-1=0$.

Example 11.4.7
Solve $3x^{2/3} - 11x^{1/3} - 4 = 0$.