

## Notes for 1.6 Other Types of Equations (pp. 136 – 143)

Topics: Equations in Quadratic Form, Equations that contain Radicals, and Equations with Rational Exponents

Name:
Date:
Instructor:

### I. Solving Equations in Quadratic Form (pp.141 – 143)

An equation is in quadratic form if it can be written as \_\_\_\_\_, where  $a \neq 0$  and  $u$  is some algebraic expression. To use this technique of solving an equation, you come to the side and rewrite the equation using \_\_\_\_ so that the equation is “easier” to work. You work the “easier” one with the  $u$ , then you revert back to the original variable to get the final answer. The  $u$  always equals the middle term’s variable part.

Ex.  $x^4 - 3x^2 - 4 = 0$  Note that the middle term is  $-3x^2$ , so let  $u = x^2$ .

\*Note that we will not have problems that have imaginary solutions.

Ex.  $7p^{-2} + 19p^{-1} = 6$  Let  $u =$

Ex.  $6(y-1)^2 - 5(y-1) - 4 = 0$  \*Do *not* multiply all this out. Use the variable substitution.  
Let  $u =$

### II. Equations with Radicals (pp. 138 - 139)

\* We will only cover the equations that contain one radical. Use the inverse of the radical that raises both sides of the equation to the power of the index, so that you can “undo” the radical.

\* Remember that you **must** check each answer back into the original problem to make sure that you are only claiming answers that work... not just all the candidates for the answers.

\* Checking using the calculator is a good option here... using Sto  $\rightarrow$  and comparing both sides of the equation, or  $Y_1$  (left) and  $Y_2$  (right), then TABLE, when the possible solutions are integers.

Ex.  $a = \sqrt{18 - 7a}$

Summary of Solving Equations with Radical Variable Term:

1. \_\_\_\_\_ the radical on one side.
2. Raise each side of the equation \_\_\_\_\_ that is the same as the radical index to eliminate the radical.
3. Solve the equation.
4. Check each proposed solution in the \_\_\_\_\_ equation.

Stop video from 7:47 – 11:16. We omit those problems with 2 radical terms.

III. Equations with Rational Exponents

\* Isolate the term or ( ) with the fractional exponent, then undo that fractional exponent with its reciprocal. Ex. a power of  $\frac{1}{2}$  would need to be squared; a power of  $\frac{2}{3}$  would need to be raised to the  $\frac{3}{2}$  power.

\* Remember to check each solution (calculator) to see if you get a true statement.

Ex.  $(y^2 - 6y)^{\frac{1}{3}} = 3$

Assignments:

Text: pp. 144 – 145 #1– 19 odd, 27 – 33 odd, 55, 61, 63, 73, 85