Math 4 Honors Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson 1-4: *Solving Equations by Chunking* Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Learning Goal:

* *I can use chunking* (“*u*”-*substitution*) *and factoring to solve complicated equations.*

In solving a new mathematical problem, it often helps to reduce it to a simpler problem by temporarily ignoring some details. Consider the task of solving the quartic equation:

 *x*4 + 6*x*2 – 16 = 0.

1. Suppose that *u* = *x*2. Rewrite the given equation in equivalent form with the letter *u*.
2. Solve the resulting equation for *u*.
3. Now use the relationship *u* = *x*2 to solve for *x*.

Find ALL solutions.

*\*\*\*Note*: This process is a HUGE technique used in calculus called ***u*-substitution** or **chunking**!

 Adapt the *chunking technique* to solve these higher-degree equations. Check your solutions.

 1. 4*x*4 – 81 = 0 2. 2*x*4 + 3*x*2 – 2 = 0

 3.  4.  (Solve for primary values.)

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**Homework: Equation-Solving Extravaganza**

*SHOW ALL WORK ON ANOTHER SHEET OF PAPER*.

Use algebraic reasoning to solve the following equations for the given variable. *Show all work.*

Use your calculator ONLY for equations involving *e* and *natural log*.

* Find all complex solutions.
* For the trigonometric equations, solve for primary values. []

1.  2. 

3.  4. 

5.  6. 

7.  8. 

9.  10. 

11.  12. 

13.  14. 

15.  16. 

Solving Absolute Value Equations

 **Example:** 1. |5*x* – 8| = 16

 2. |-2*x* – 1| = 11

 3. -5|3 + 4*x*| = -115

 4. 2 – 5|5*x* – 5| = -73

 5. 

Math 3 Honors Flashback:

Use algebraic reasoning to solve the following equations for the given variable. *Show all work.*

Look out for extraneous solutions . . . . .



1. 2.





3. 4.

5.  6. 

7.  8. 



9. 10.

**+**

**+**

**=**