Day 06 Solving Radical Equations

Name _____

Date _____ Block _____

A. Solving an Equation with One Radical:
1. Isolate the radical.
2. Raise *both sides* to the power of the index.
3. Simplify and solve for the variable.
4. Check for extraneous solutions.

Practice problems:

1. $\sqrt{x} = \dfrac{1}{9}$

2. $\sqrt[4]{2x} - 13 = -9$

3. $\sqrt{x-5} - 7 = 0$

4. $\sqrt[3]{x+40} = -5$

5. $x - 4 = \sqrt{2x}$

6. $\sqrt{3x+13} = x+5$

7. $2\sqrt[3]{1-3x} + 4 = 6$

B. Solving an Equation with Rational Exponents:
1. Isolate the variable or expression that is raised to the power.
2. Raise both sides of the equation to the reciprocal power of the rational exponent.
3. Simplify.
4. Check for extraneous solutions.

8. $x^{\frac{1}{3}} - \dfrac{2}{5} = 0$

9. $3(x+1)^{\frac{4}{3}} = 48$

10. $-(3x+4)^{\frac{1}{2}} + 3 = 0$

C. Solving an Equation with Two Radicals:
1. Isolate one of radical on *each side* of the equation.
2. Raise *both sides* to the power of the index.
3. Simplify and solve for the variable.
4. Check for extraneous solutions.

11. $\sqrt{x-4} = \sqrt{2x-3}$

12. $\sqrt[4]{6x-5} = \sqrt[4]{x+10}$

13. $2\sqrt[3]{10-3x} = \sqrt[3]{2-x}$

*14. $\sqrt{x+9} - \sqrt{x} = \sqrt{3}$

*15. $\sqrt{x+2} - 7 = \sqrt{x+9}$

16. $\sqrt{2x-5} + \sqrt{2x+3} = 4$

17. $\sqrt{x-8} + \sqrt{x+3} = 1$

D. Solving an Equation with a Variable Exponent:
1. Get like bases (use your power card)
2. Simplify one side of the equation.
3. Raise both sides to the inverse power.
4. Solve and check for extraneous solutions.

18. $2^{3x}\left(\dfrac{1}{4}\right)^{2x} = 8$

19. $\dfrac{64^{-x}}{16^{2x}} = 32^{x-1}$

20. $9^{2x}\left(\dfrac{1}{27}\right)^{-3x} = 81^{x+2}$