Name_____ Date_____ Period_____

Day #48 Homework

Rewrite each of the following expressions as a single base raised to a single power. Show your work.

1. $\left(5^2\right)^{x-3} \cdot 5^{3x-4}$	2. $4^{2x-3} \cdot \left(2^3\right)^{2x+4}$	3. $\dfrac{\left(3^3\right)^{x+2}}{9^{x-5}}$
4. $\dfrac{4^{x-5} \cdot 8^{2x-4}}{2^{x+6}}$	5. $5^{12-2x} \cdot 25^{x-6}$	6. $\sqrt{125^{4-2x} \cdot 5^{2x+2}}$

Solve each of the following equations by first, rewriting each side of the equation as a single base raised to a single power. Then, set the exponents equal to each other and solving the equation for x. Remember, if this is not possible, you will need to solve the equation graphically on the calculator.

7. $9^{2x-4} = 27^{x-3}$	8. $\dfrac{8^{2x+4}}{4^{x-3}} = 4^{x+5}$

For exercises 9 – 14, solve the exponential equations by rewriting each side of the equation as a power of the same base, if possible. If it is not possible to rewrite each side as a power of the same base, solve the equation using the graphing calculator.

9. $5^{4x+2} = 25^{x-8}$	10. $16^{3x-2} = 8^{5x}$
11. $\left(\frac{1}{8}\right)^{x+2} = 16^{2-x}$	12. $\sqrt{\frac{8^{x-1}}{2^x}} = 32^{x+3}$
13. $3^{x-2} = -2^{x-1} + 3$	14. $3^x \cdot 9^{2x-3} = 27^{x+9}$