8.5 Solving Worksheet   Name: _____

Solve each of the following equations.

1. $5^{2x} = 5^{12}$

2. $\log_2 3x = \log_2 15$

3. $\log_3 (3x - 2) = \log_3 19$

4. $4^x = 16^3$

5. $15^{2n-3} = 15^{25}$

6. $\log 4x = \log 100$

7. $2^{x-1} = 16$

9. $\log_2 3x = \log_2 4$

10. $\log_7 2x + \log_7 20 = \log_7 8 + \log_7 5$

12. $5^x \cdot 5^3 = 5^7$

13. $5^x = 100$

14. $4^x - 5 = 12$

15. $4^x - 5 = 12$

16. $\log_3(3x - 2) = 3$

17. $15^{2n-3} = 210$

18. $\log 4x = 2$

19. $2^{x-1} = 16$

20. $15^{2n-3} = 225$

Write an exponential equation for the following, then solve for the question that is asked. Remember that there are two exponential equations, $y = P(1+r)^t$ and $y = Pe^{rt}$.

21. A new car cost $20,000 and is depreciating by 15% per year. How many years will it be until the car is only worth $10,000?

22. The number of mold spores on a piece of bread is 200 and is growing continuously at a rate of 9% per hour. How many hours will it be until there are 5000 mold spores on the bread?

23. Candice has $3000 to invest in an account which compounds interest continuously at an annual rate of 4%. How long will it take her account to grow to $4,000?