Algebra II
Exp/Log #2

Name _____

Simplify the following expressions.

1. $e^3 \cdot e^5$

2. $\frac{27e^7}{3e^4}$

3. $\left(4e^{-3x}\right)^2$

4. $\sqrt[3]{8e^{12x}}$

5. $e^x \cdot e^4 \cdot e^{x+3}$

6. $\frac{11e^9}{22e^{10}}$

Tell whether the following functions represent exponential growth or exponential decay. Then graph the function.

7. $f(x) = e^{3x}$

8. $g(x) = 2e^{-x}$

Using your knowledge of transformations, graph the following and state the domain and range.

9. $f(x) = e^{x-2}$

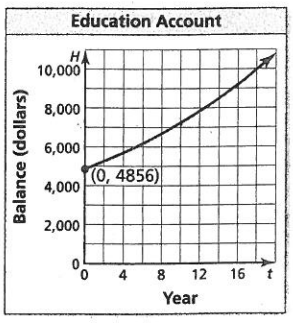
10. $y = e^{x+3} + 1$

Use the properties of exponents to rewrite the function in the form $y = a(1 + r)^t$ or $y = a(1 - r)^t$. Then find the percent rate of change.

12. $f(x) = 2e^{0.4t}$

13. $y = e^{-0.75t}$

14. Investment accounts for a house and education earn annual interest compounded continuously. The balance H (in dollars) of the house fund after t years can be modeled by $H = 3224e^{0.05t}$. The graph shows the balance in the education fund over time. Which account has the greater principal? Which account has the greater balance after 10 years?



15. Explain why $A = P\left(1 + \frac{r}{n}\right)^n$ approximates $A = Pe^{rt}$ as n approaches positive infinity.