

HOMWORK: NATURAL LOG AND e

NAME: _____ DAY 3 DUE: _____

1. $(3e^{5x})^{-1} = \frac{1}{3e^{5x}}$	2. $e^x \cdot e^{-3x} \cdot e^4 = \frac{(e^{-2x})(e^4)}{e^{-2x+4}}$
3. $\sqrt{9e^6} = (9e^6)^{1/2} = 9^{1/2}e^3 = 3e^3$	4. $e^x \cdot 5e^{x+3} = 5e^x e^{x+3} = 5e^{2x+3}$
5. $\frac{3e^1}{e^{-x}} = 3e^{1-x}$	6. $\frac{4e^x}{e^{4x}} = 4e^{x-4x} = 4e^{-3x} = \frac{4}{e^{3x}}$
7. $\sqrt[3]{8e^{9x}} = (8e^{9x})^{1/3} = 8^{1/3}e^{3x} = 2e^{3x}$	8. $\frac{6e^{4x}}{8e} = \frac{3e^{4x}}{4e^1} = \frac{3e^{4x-1}}{4}$

Determine whether the function is an example of exponential growth or decay.

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

12. $f(x) = \frac{1}{3}e^{4x}$

13. $f(x) = e^{-4x}$

14. $f(x) = \frac{3}{5}e^x$

Decay

Growth

Decay

Growth

20. You deposit \$2000 in an account that pays 4% annual interest compounded continuously. What is the balance after 5 years?

$$A = Pe^{rt}$$

$$A = 2000 e^{(0.04)(5)} \approx \boxed{\$2442.81}$$

21. You deposit \$800 in an account that pays 2.65% annual interest compounded continuously. What is the balance after 12.5 years?

$$A = 800 e^{(0.0265)(12.5)}$$

$$\boxed{A \approx \$1114.17}$$

