Name _____ Date _____

6.2 Practice A

In Exercises 1–6, simplify the expression.

1. $e^2 \bullet e^5$

2. $e^{-3} \bullet e^8$

3. $\dfrac{12e^5}{36e^2}$

4. $\dfrac{15e^4}{3e^9}$

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

6. $\sqrt{16e^{10x}}$

7. Describe and correct the error in simplifying the expression.

$$\left(2e^{3x}\right)^2 = (2)^2\left(e^{3x}\right)^2$$
$$= 4e^{9x^2}$$

In Exercises 8–10, tell whether the function represents *exponential growth* or *exponential decay*. Then graph the function.

8. $y = e^{4x}$

9. $y = e^{-x}$

10. $y = 4e^{-2x}$

In Exercises 11–13, 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.

11. $y = e^{-0.5x}$

12. $y = 2e^{-0.2x}$

13. $y = 5e^{0.6x}$

In Exercises 14–16, use a table of values or a graphing calculator to graph the function. Then identify the domain and range.

14. $y = e^{x-1}$

15. $y = e^{x+2}$

16. $y = 3e^x + 2$

17. You invest $4000 in an account to save for college.

a. Option 1 pays 5% annual interest compounded semi-annually. What would be the balance in the account after 2 years?

b. Option 2 pays 4.5% annual interest compounded continuously. What would be the balance in the account after 2 years?

c. At what time t (in years) would Option 1 give you $100 more than Option 2?