7.3 HW ~ Use functions involving e Name _____

(1-6) Simplify the expression.

1) $e^{-2} \cdot e^{6}$

2) $(2e^{-2})^{-4}$

3) $e^{x} \cdot e^{-3x} \cdot e^{4}$

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

5) $\dfrac{4e^{x}}{e^{4x}}$

6) $\dfrac{6e^{4x}}{8e}$

7) MULTIPLE CHOICE What is the simplified form of $\sqrt{\dfrac{4(27e^{13}x)}{3e^{7}x^{-3}}}$?

A. $6e^{10}x$ B. $6e^{6}x^{4}$ C. $\dfrac{6e^{3}}{x^{2}}$ D. $6e^{3}x^{2}$

8) Describe and correct the error in simplifying the expression.

$$\frac{e^{6x}}{e^{-2x}} = e^{6x - 2x}$$
$$= e^{4x}$$

(9-11) Use a calculator to evaluate the expression.

9) $e^{\frac{-3}{4}}$

10) $e^{\frac{1}{2}}$

11) $5e^{\frac{2}{3}}$

(12-14) Match the function with its graph.

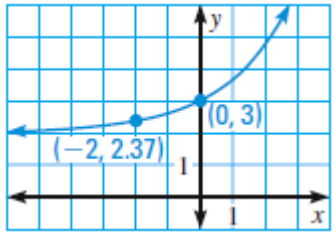
12) $y = 0.5e^{0.5x}$

13) $y = 2e^{0.5x}$

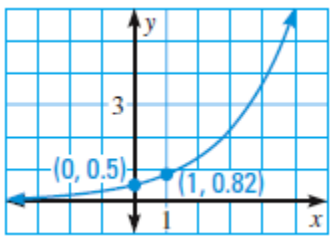
14) $y = e^{0.5x} + 2$

_____ _____ _____

A.



B.



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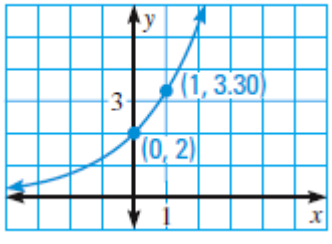


(15-18) Tell whether the function is an example of exponential growth or exponential decay. Explain.

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

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

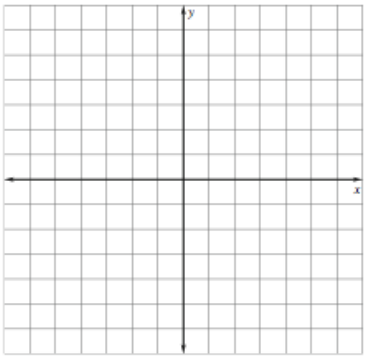
17) $f(x)=e^{3x}$

18) $f(x)=4e^{-2x}$

(19-22) Graph the function. State the domain and range.

19) $y=e^{-2x}$

x	y

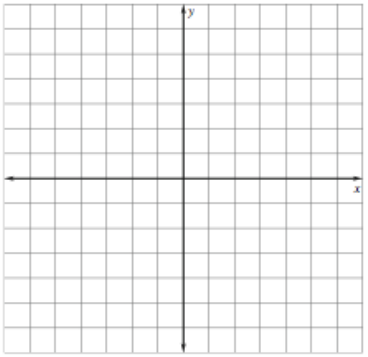


D: _____

R: _____

20) $y=0.5e^{x}$

x	y

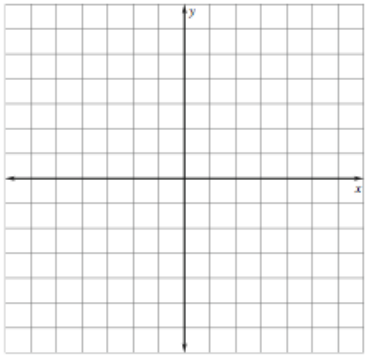


D: _____

R: _____

21) $y=2.5e^{-0.5x}+2$

x	y

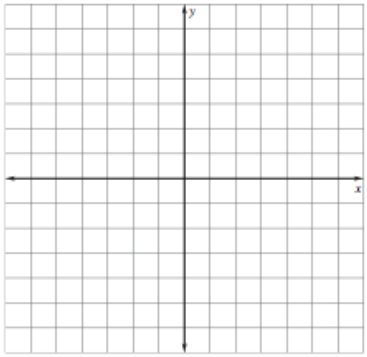


D: _____

R: _____

22) $f(x)=\frac{1}{2}e^{x+3}-2$

x	y



D: _____

R: _____

23) Scientists used traps to study the Formosan subterranean termite population in New Orleans. The mean number y of termites collected annually can be modeled by $y=738e^{0.345t}$ where t is the number of years since 1989. What was the mean number of termites collected in 1999?

24) You deposit $2,000 in an account that pays 4% annual interest compounded continuously. What is the balance after 5 years?