



Practice

6.1 Exponential Growth and Decay

Find the multiplier for each rate of exponential growth or decay.

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|----------------------|----------------------|
| 1. 1% growth _____ | 2. 1% decay _____ |
| 3. 7% decay _____ | 4. 12% growth _____ |
| 5. 10% growth _____ | 6. 3% decay _____ |
| 7. 5.2% decay _____ | 8. 7.5% growth _____ |
| 9. 0.4% growth _____ | 10. 5.9% decay _____ |

Evaluate each expression to the nearest thousandth for the given value of x .

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|--|--|
| 11. 2^x for $x = 0.5$ _____ | 12. $10(2^x)$ for $x = \frac{2}{3}$ _____ |
| 13. $(\frac{1}{2})^{3x}$ for $x = 2$ _____ | 14. $7(0.5)^x$ for $x = -2$ _____ |
| 15. $42 \cdot 2^{x-1}$ for $x = \frac{3}{4}$ _____ | 16. $20 \cdot 2^{2x}$ for $x = 1.75$ _____ |
| 17. $15(\frac{1}{2})^{2x-1}$ for $x = 2$ _____ | 18. $66(\frac{1}{2})^x$ for $x = 3$ _____ |
| 19. $512(2)^{3x}$ for $x = 0.1$ _____ | 20. $12(2)^{x-2}$ for $x = 6.5$ _____ |

Predict the result in each situation.

21. The population of a city in 1990 was 1,215,112. The population was growing at a rate of about 5% per decade. Predict the population of the city
- | | |
|-------------------------------|-------------------------------|
| a. in the year 2000.
_____ | b. in the year 2005.
_____ |
|-------------------------------|-------------------------------|
22. The initial population of bacteria in a lab test is 400. The number of bacteria doubles every 30 minutes. Predict the bacteria population at the end of
- | | |
|------------------------|--------------------------|
| a. two hours.
_____ | b. three hours.
_____ |
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