

Unit 6: Introduction to Exponential Functions

PRACTICE

Name: _____ Date: _____

Show all work. Round decimals to two places unless the answer is exact.

1. An exponential function has the form $f(x) = a \cdot b^x$. If $a = 5$ and $b = 3$, find $f(2)$.

Answer: _____

3. A car is worth \$20,000 and loses 10% of its value each year. Using $20000 \cdot (0.9)^t$, find its value after 2 years. Round to the nearest cent.

Answer: _____

5. A bacteria culture grows by a factor of 3 each hour, starting at 10 bacteria. How many bacteria are there after 3 hours? Use $10 \cdot 3^t$.

Answer: _____

7. A quantity decays by 20% each period. What is the decay factor b (as a decimal) used in $a \cdot b^t$?

Answer: _____

9. The value of a house is modeled by $300000 \cdot (1.04)^t$ dollars, where t is in years. Find the value after 1 year.

Answer: _____

11. For $f(x) = a \cdot b^x$, you know $f(0) = 7$. What is the value of a ?

Answer: _____

2. A population starts at 200 and doubles every year. Write its value as $200 \cdot 2^t$, then find the population after 4 years ($t = 4$).

Answer: _____

4. For the function $f(x) = 4 \cdot (1/2)^x$, find $f(3)$.

Answer: _____

6. An investment of \$1000 grows at 5% per year. The growth factor b for the model $1000 \cdot b^t$ is 1 plus the rate. What is b ?

Answer: _____

8. Evaluate $f(x) = 2 \cdot b^x$ at $x = 3$ when $b = 4$.

Answer: _____

10. A sample of 800 mg of a substance halves every hour. Using $800 \cdot (1/2)^t$, how many mg remain after 3 hours?

Answer: _____

12. A town of 5000 people grows at a factor of 1.1 per year. Find the population after 2 years using $5000 \cdot (1.1)^t$. Round to the nearest whole number.

Answer: _____