Exponentials and logarithms Worksheet

Precalculus

Name _____ Date _____

Warm-up

1. $y = 19 \cdot 2^x$. Find y when $x = 2$.

2. $\log_8 64$

3. Solve: $\log_5 x = 3$

4. Which is exponential?
   (A) $y = \dfrac{x}{2}$ (B) $y = 2x + 3$ (C) $y = x^2$ (D) $y = 3 \cdot 2^x$

5. $\log_2 32$

Practice

6. A substance halves every 8 hours. Start 28 g. How many grams after 16 hours?

7. Rewrite $\log_3 x = 4$. What's x?

8. Solve: $4^x = 8$

9. A colony starts at 87 and doubles every 2 hours. How many after 6 hours?

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10. $\log_3 3 + \log_3 9$

11. Solve: $3^{x+3} = 9$

12. 3% growth means multiplying by...
    (A) 1.3 (B) 0.93 (C) 0.03 (D) 1.03

13. $\log_4 \dfrac{1}{64}$

Challenge

14. An account is \$2000 and grows 10% a year. How much after 2 years, in dollars?

15. Between which consecutive integers is $\log_2 18$? Enter the smaller.

16. Solve: $\log x + \log(x-2) = \log 35$

17. A population is 26 and triples every year. In how many years does it reach 234?

18. If $\log_4 a = 6$, what's $\log_4 a^2$?

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Exponentials and logarithms Worksheet: Answer Key

Precalculus

1. 76

   $19 \cdot 4$.

2. 2

   $8^2 = 64$.

3. 125

   $x = 5^3$.

4. (D) $y = 3 \cdot 2^x$

   The variable is in the exponent.

5. 5

   $2^5 = 32$.

6. 7

   2 half-lives.

7. 81

   3^4.

8. $\frac{3}{2}$

   Write both with base 2: $2^{2x} = 2^3$.

9. 696

   $6 \div 2 = 3$ doublings.

10. 3

    Multiply inside: $\log_3 27$.

11. -1

    $x + 3 = 2$.

12. (D) 1.03

    $100\% + 3\%$.

13. -3

    It's 4^{-3}.

14. 2420

    $2000(1.1)^2$.

15. 4

    $2^4 < 18 < 2^5$.

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16. 7

    $x(x-2) = 35$. Reject the negative solution.

17. 2

    Divide: $3^n = 9$.

18. 12

    A power comes out front.

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