Radicals and exponential functions Worksheet

Algebra

Name _____ Date _____

Warm-up

1. Find $\sqrt{9}$.

2. For $y = 30 \cdot 2^x$, what's y when $x = 0$?

3. $\sqrt{108} = c\sqrt{3}$. Find c.

4. Evaluate $y = 4 \cdot 4^x$ at $x = 2$.

5. Which is true?
   (A) $\sqrt{4 \cdot 9} = \sqrt{4}\sqrt{9}$ (B) $\sqrt{4+9} = 5$ (C) $\sqrt{4+9} = \sqrt{4} + \sqrt{9}$ (D) $\sqrt{4} + \sqrt{9} = \sqrt{13}$

Practice

6. Find $100^{1/2}$.

7. Something grows 3% per year. What's the multiplier?
   (A) 1.03 (B) 3 (C) 0.03 (D) 0.97

8. $\sqrt{18} + \sqrt{50} = c\sqrt{2}$. Find c.

9. Which function is decay?
   (A) $y = 2x$ (B) $y = 2(2)^x$ (C) $y = 2(1.5)^x$ (D) $y = 2(0.5)^x$

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10. $3\sqrt{2} + 6\sqrt{2} = c\sqrt{2}$. Find c.

11. Something shrinks 9% per year. What's the multiplier?
    (A) 0.91 (B) 1.09 (C) 0.09 (D) 9

Challenge

12. $\sqrt{2} \cdot \sqrt{18}$ is a whole number. What is it?

13. $y = ab^x$ passes through $(0, 5)$ and $(1, 10)$. Find b.

14. Rationalize: $\dfrac{21}{\sqrt{3}} = c\sqrt{3}$. Find c.

15. A population starts at 89 and doubles every 3 hours. How many are there after 6 hours?

16. Find $8^{2/3}$.

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Radicals and exponential functions Worksheet: Answer Key

Algebra

1. 3

   $3^2 = 9$.

2. 30

   Anything to the 0 power is 1.

3. 6

   $108 = 36 \cdot 3$, and $\sqrt{36} = 6$.

4. 64

   $4^2 = 16$, then multiply by 4.

5. (A) $\sqrt{4 \cdot 9} = \sqrt{4}\sqrt{9}$

   Roots split over multiplication, not over addition.

6. 10

   An exponent of $\frac{1}{2}$ means square root.

7. (A) 1.03

   Keep the 100% and add 3%.

8. 8

   $3\sqrt{2} + 5\sqrt{2}$.

9. (D) $y = 2(0.5)^x$

   The base is between 0 and 1.

10. 9

    Same root: add the numbers in front.

11. (A) 0.91

    Keep 100% minus 9%.

12. 6

    $\sqrt{2 \cdot 18} = \sqrt{36}$.

13. 2

    a is the start, and $\frac{10}{5} = 2$.

14. 7

    Multiply top and bottom by $\sqrt{3}$, then simplify.

15. 356

    6 hours is 2 doublings.

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16. 4

    Cube root first, then square.

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