

Practice Problems for Exponents, Roots, and Logarithms
from www.topmath.info

1 What can x be, if $x^2 - 9 = 0$?

2 What can x be, if $x^4 - 256 = 0$?

3 A number, v , has 21 subtracted from it to produce a second number. The cube root of the second number is -0.3 . What is v ?

4 A number, w , has 4 subtracted from it to produce a second number. The fifth root of the second number is -0.3 . What is w ?

5 A number, w , has 6 subtracted from it to produce a second number. The cube root of the second number is 0.4 . What is w ?

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6 A number, u , has 10 subtracted from it to produce a second number. The fifth root of the second number is 0.3. What is u ?

7 What is the square root of 64?

8 What is the cube root of 125?

9 What is the cube root of 4,096?

10 The logarithm base 3 of 83 is closest to what integer?

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11 At the beginning of a week, Shirley has some money. Every day, Shirley spends money in such a way that there is only $\frac{1}{5}$ of the previous day's amount left. After doing this for 5 days, Shirley has \$2.00 remaining. How much did Shirley have at the beginning?

12 Let $x > 0$. If $\sqrt{x}/(x^6) = x^y$, what is y ?

13 What is 5 cubed?

14 What is 37 cubed?

15 What can x be, if $x^2 - 49 = 0$?

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- 1 ANSWER: -3 or 3. EXPLANATION: Remember that both negative numbers and positive numbers have positive squares."
- 2 ANSWER: -4 or 4. EXPLANATION: The fourth root of a number is the square root of the square root of the number. The square root of 256 is 16, and the square root of 16 is 4. Since the exponent (4) is even, both the positive and negative roots are correct answers.
- 3 ANSWER: 20.973. EXPLANATION: The second number is -0.3 cubed, or -0.027. This is 21 less than v , so we add to get the answer.
- 4 ANSWER: 3.99757. EXPLANATION: The second number is -0.3 to the fifth power, or -0.00243. This is 4 less than w , so we add to get the answer.
- 5 ANSWER: 6.064. EXPLANATION: The second number is 0.4 cubed, or 0.064. This is 6 less than w , so we add to get the answer.

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6 ANSWER: 10.00243. EXPLANATION: The second number is 0.3 to the fifth power, or 0.00243. This is 10 less than u, so we add to get the answer.

7 ANSWER: 121

8 ANSWER: 1728

9 ANSWER: 110592

10 ANSWER: 4. EXPLANATION: Note that $3^4 = 81$, and no other integer power of 3 is anywhere near as close to 83.

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11 ANSWER: \$6,250.00. EXPLANATION: Work the problem backward from the end of the time period. Start with the ending value of \$2.00, and multiply by 5 a total of 5 times. Since 5^5 is 3125, you can simply multiply \$2.00 by 3125 to obtain the answer.

12 ANSWER: -5.5. EXPLANATION: The square root of x is $x^{(1/2)}$. You divide powers by subtraction, so the answer is $1/2 - 6$.

13 ANSWER: 125

14 ANSWER: 50653

15 ANSWER: -7 or 7. EXPLANATION: Remember that both negative numbers and positive numbers have positive squares."