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

1 What is 20 squared?

2 What is 30 cubed?

3 What can x be, if $x^3 + 27 = 0$?

4 A number, q, has 4 added to it to produce a second number. The cube root of the second number is -0.4. What is q?

5 A number, q, has 7 added to it to produce a second number. The fifth root of the second number is -0.4. What is q?

6 A number, u, has 20 added to it to produce a second number. The cube root of the second number is 0.9. What is u?

7 A number, v, has 4 added to it to produce a second number. The fifth root of the second number is 0.1. What is v?

8 If $x^2 + x = 90$, what are the two possible values of $x^2 - x$?

9 What is the square root of 2,401?

10 What is the square root of 4,225?

11 What is the cube root of 166,375?

12 The logarithm base 4 of 254 is closest to what integer?

13 At the beginning of a week, Richard has some money. Every day, Richard spends money in such a way that there is only 1/5 of the previous day's amount left. After doing this for 2 days, Richard has $2.50 remaining. How much did Richard have at the beginning?

14 Let x > 0. If sqrt(x)/(x^6) = x^y, what is y?

15 What is 0 cubed?

1 ANSWER: 400

2 ANSWER: 27,000

3 ANSWER: -3. EXPLANATION: The number whose cube is 27 is 3. Because x^3 must be negative, x must also be negative.

4 ANSWER: -4.064. EXPLANATION: The second number is -0.4 cubed, or -0.064. This is 4 greater than q, so we subtract to get the answer.

5 ANSWER: -7.01024. EXPLANATION: The second number is -0.4 to the fifth power, or -0.01024. This is 7 greater than q, so we subtract to get the answer.

6 ANSWER: -19.271. EXPLANATION: The second number is 0.9 cubed, or 0.729. This is 20 greater than u, so we subtract to get the answer.

7 ANSWER: -3.99999. EXPLANATION: The second number is 0.1 to the fifth power, or 0.00001. This is 4 greater than v, so we subtract to get the answer.

8 ANSWER: 9 and -10. EXPLANATION: You can factor $x^2 + x$ to be $x(x+1)$. These are consecutive integers that multiply to a product of 90. The first two such integers that come to mind are 9 and 10, and of course, -10 and -9 form the other solution.

9 ANSWER: 1764

10 ANSWER: 4,900

11 ANSWER: 421,875

12 ANSWER: 4. EXPLANATION: Note that 4^4 = 256, and no other integer power of 4 is anywhere near as close to 254.

13 ANSWER: $62.50. EXPLANATION: Work the problem backward from the end of the time period. Start with the ending value of $2.50, and multiply by 5 a total of 2 times. Since 5^2 is 25, you can simply multiply $2.50 by 25 to obtain the answer.

14 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.

15 ANSWER: 0