**Exponents and Radicals**: You know that the appropriate radical will "undo" an exponent, and the right power will "undo" a root. For example:

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| --- | --- | --- |
|  | OR |  |

For the square (or "second") root, we can write it as the one-half power, like this:9-2009 All Rights Reserved

sqrt(4) = 4^(1/2) = 2

The cube (or "third") root is the one-third power:

cbrt(8) = 8^(1/3) = 2

The fourth root is the one-fourth power and so on.

**RULE 5: Whenever you have a radical expression you can write the equivalent rational exponent expression.**

Specifically, OR In General:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | | |  | | | **Notice:**   The root becomes the denominator and the exponent becomes the numerator.  Examples: | | | | | | (1)    http://www.regentsprep.org/Regents/mathb/3B1/RatPo5.gif | (2)    http://www.regentsprep.org/Regents/mathb/3B1/RatPo6.gif | | (3)    http://www.regentsprep.org/Regents/mathb/3B1/RatPo7.gif | |   The Rules of Exponents are still valid for rational exponents!!!   |  |  | | --- | --- | | **Rule** | **Example** | |  | http://www.regentsprep.org/Regents/mathb/3B1/RatPo9.gif | |  | http://www.regentsprep.org/Regents/mathb/3B1/RatPo11.gif | |  | http://www.regentsprep.org/Regents/mathb/3B1/RatPow1.gif | |

**Rewrite and simplify the following expressions in rational exponent form.**

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**Solve for x. Round answers to 2 decimal places if necessary.**

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