Reviewing Radicals

First the vocabulary:

$$\sqrt[n]{a}$$

$n = index$
$a = radicand$
$\sqrt{} = radical$

*When the index is 2, we don't bother writing it.

Finding the radical of a number is like applying a fractional exponent to base, where the base of the fraction is equal to the index of the radical.

For example:

$\sqrt[2]{16} = 16^{\frac{1}{2}} = 4$

$\sqrt[3]{8} = 8^{\frac{1}{3}} = 2$

Of course, this works both ways!

Try it:

1) $81^{\frac{1}{4}} =$

   $\sqrt[4]{81} =$

   3

2) $125^{-\frac{1}{3}} =$

   $\dfrac{1}{125^{\frac{1}{3}}} =$

   $\dfrac{1}{\sqrt[3]{125}} =$

   $\dfrac{1}{5}$

HW: P. 26 #2, 5 (DOSO for both)

Solving

Recall:
To solve $x^2 = 36$, we would square root both sides and get $x = \pm 6$.

$x^2 = 36$
$\sqrt{x^2} = \sqrt{36}$
$x = \pm 6$

The same theory applies when you have a different exponent.

$\therefore$ To solve for a base:

To Solve This:	Do this to both sides:
x^2	$\sqrt{}$ or $\frac{1}{2}$
x^3	$\sqrt[3]{}$ or $\frac{1}{3}$
x^4	$\sqrt[4]{}$ or $\frac{1}{4}$
$\vdots$	$\vdots$

To solve for an exponent:
Try to re-write the equation so that you have the same base on both sides (guess and check – for now).

Rule:
$If\ c^u = c^v, then\ u = v.$

Ex:

1) $2^x = 8$
   $2^x = 2^3$
   $x = 3$

2) $4^x = 16$
   $4^x = 4^2$
   $x = 2$

HW: P. 26 #2, 5 (DOSO for both)