Solving Equations with Rational Exponents

Remember that radical expressions can be represented with rational/fractional exponents (and vice versa).

Examples: $\sqrt{x} = x$ $\sqrt[3]{x^2} = 8^{1/3} =$

Now we will work on solving equations containing fractional exponents within them.

- 1) Isolate the power
- 2) Raise both sides to the reciprocal power to cancel.
- 3) Solve
- 4) Check your answer

Reviewing reciprocals is necessary before we start. If one side of the equation is raised to a certain fractional power, raising both sides to the reciprocal power will 'unlock' that side.

Examples:	$\frac{1}{2}$ reciprocal \rightarrow	$\frac{2}{3}$ reciprocal \rightarrow	$\frac{4}{3}$ reciprocal \rightarrow
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Example 1:	Example 2:	Example 3:
$(3x-1)^{\frac{1}{2}} = (2x+5)^{\frac{1}{2}}$	$3(5x-1)^{\frac{1}{2}} - 2 = 0$	$(3x+2)^{\frac{1}{3}}+1=0$
Example D:	Example E:	
$(3x+1)^{\frac{1}{3}} = -5$	$3(2x+6)^{\frac{1}{4}}-6=0$	

Almost got it! But here are some problems where the fractional power does not have a numerator of 1. Use the ______ still. $\sqrt[3]{8^5} = \sqrt[2]{9^3} =$

Example F:	Example G:	Example H:	Example I:
$4x^{\frac{3}{2}} - 8 = 0$	$(x-1)^{\frac{2}{3}} = 64$	$4(3x+5)^{\frac{2}{3}} = 100$	$3(x+2)^{\frac{3}{4}} + 6 = 30$