

Solving Radical Equations Day 2 Notes (Honors)

What if the equation you are solving involves rational exponents? How do you go about canceling them out?

Raise each side to the reciprocal of the fractional exponent

Examples: Don't forget to check for extraneous solutions!!!

$(x+3)^{2/3} = 4$ $(x+3)^{2/3} = 4$ $(x+3)^{2/3} = (4)^{3/2}$ $x+3 = 4^{3/2}$ $x+3 = \sqrt{4^3}$ $x+3 = (\sqrt{4})^3$ $x+3 = 2^3$ $x+3 = 8$ $x = 5$ check $(5+3)^{2/3} = 4$ $(8)^{2/3} = 4$ $\sqrt[3]{8^2} = 4$ $\sqrt[3]{64} = 4$ $4 = 4 \checkmark$	$(x-2)^{2/3} = 9$ $x-2 = 9^{3/2}$ $x-2 = \sqrt{9^3}$ $x-2 = (\sqrt{9})^3$ $x-2 = (3)^3$ $x-2 = 27$ $x = 29$ check $(29-2)^{2/3} = 9$ $(27)^{2/3} = 9$ $\sqrt[3]{27^2} = 9$ $(\sqrt[3]{27})^2 = 9$ $3^2 = 9$ $9 = 9 \checkmark$
$\frac{2(x-2)^{2/3}}{2} = \frac{50}{2}$ $(x-2)^{2/3} = (25)^{3/2}$ $x-2 = 25^{3/2}$ $x-2 = \sqrt{25^3}$ $x-2 = (\sqrt{25})^3$ $x-2 = 5^3$ $x-2 = 125$ $+2 \quad +2$ $x = 127$ $2(127-2)^{2/3} = 50$ $2(125)^{2/3} = 50$ $2\sqrt[3]{125^2} = 50$ $2(\sqrt[3]{125})^2 = 50$ $2(5)^2 = 50$ $2(25) = 50$ $50 = 50 \checkmark$	$\frac{2(x+3)^{3/2}}{2} = \frac{54}{2}$ $(x+3)^{3/2} = (27)^{2/3}$ $x+3 = 27^{2/3}$ $x+3 = \sqrt[3]{27^2}$ $x+3 = 3^2$ $x+3 = 9$ $x = 6$ $2(6+3)^{3/2} = 54$ $2(9)^{3/2} = 54$ $2\sqrt{9^3} = 54$ $2(\sqrt{9})^3 = 54$ $2(3)^3 = 54$ $3^3 = 27$ $27 = 27 \checkmark$

