conjugation (mnemonic)

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Related topic	AlgebraicConjugates
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Related topic	DifferenceOfSquares
Defines	rationalize the denominator
Defines	rationalize the numerator

In pre-college mathematics, students typically learn how to rationalize the denominator (or, in some cases, numerator) of expressions such as $\dfrac{3}{\sqrt{11}+2}$ and $\dfrac{\sqrt{x+h}-\sqrt{x-h}}{2h}$. In to do this, they multiply the numerator and denominator of the fraction by an algebraic conjugate (or, in some cases, its negative) to eliminate the `http://planetmath.org/SquareRoot`square root(s) in the appropriate part of the fraction. Typically, the only algebraic conjugates that pre-college students encounter are those in some quadratic extension.

Most students who have advanced far enough in mathematics to encounter rationalizing denominators or numerators have also encountered some (usually Indo-European) foreign . Such students are familiar with the concept of of verbs, in which the ending of the verb changes to make agreement with the person and number of the subject. A helpful mnemonic for students to the algebraic conjugates that they need to use is pointing out to them that the procedure in mathematics is (and actually easier) than in foreign . The algebraic conjugates (or their negatives) that they need are nothing more than changing the ending of the number. For example, the way that a pre-college student is taught to rationalize the denominator of an expression such as $\dfrac{3}{\sqrt{11}+2}$ is:

$$\begin{aligned}
\frac{3}{\sqrt{11}+2} &= \frac{3}{\sqrt{11}+2}\cdot\frac{\sqrt{11}-2}{\sqrt{11}-2} \\
&= \frac{3\sqrt{11}-6}{11-4} \\
&= \frac{3\sqrt{11}-6}{7}
\end{aligned}$$