# Lesson 20: Rationalizing the Denominator & Complex Numbers

## Rationalizing the Denominator: One Square Root

**Standard Form for a Radical Expression is when…**

1.  The radicand contains no factors that can be written to an exponent greater than or equal to the index. $\sqrt[3]{b^4}$ *is not in standard form*.

2.  The exponent of each factor of the radicand and the index of the radical have no common factor other than the number 1. $\sqrt[6]{b^3}$ *is not in standard form*.

3.  The radicand contains no fractions. $\sqrt[3]{\dfrac{a}{b}}$ *is not in standard form*.

4.  No radicals appear in the denominator. $\dfrac{1}{\sqrt{b}}$ *is not in standard form*.

**Rationalizing the Denominator:**

> the process of eliminating radicals from the denominator of an expression

**Procedure for Rationalizing a Denominator of One Term**

1.  Multiply the numerator and the denominator by a radical with the same index as the radical that one wants to eliminate from the denominator.

2.  The exponent of each factor of the radicand must be such that the product of the radicands in the denominator results in a radical that is a perfect *n*th root.

3.  Carry out the multiplication and reduce the fraction if possible.

    Don't forget to simplify the inside of the radical first if possible.

With a square root, $\dfrac{5}{2x\sqrt{3}}$, one needs a total of 2 factors of 3 under the radical in the denominator, so multiply the numerator and denominator by another $\sqrt{3}$.