

Unit 5 Notes

Unit 5.1

If $\sqrt{-1} = i$, then $i^2 = -1$

Unit 5.2

To simplify fractions there are certain things we don't want in the denominator:

No negatives

No radical symbols

No negative exponents

No imaginary numbers

To get rid of an "i" in the denominator, multiply by $\frac{i}{i}$

Example:

Given: $\frac{-3}{5i}$

Multiply by $\frac{i}{i}$

So $\frac{-3}{5i} \cdot \frac{i}{i} = \frac{-3i}{5i^2}$

Remember that $i^2 = -1$

So we now have $\frac{-3i}{5(-1)}$, which is, $\frac{-3i}{-5}$, which simplifies to $\frac{3i}{5}$

To get rid of an "i" in the denominator with a binomial multiply by its conjugate

Example:

Given: $\frac{-3}{5-i}$

Multiply by $\frac{5+i}{5+i}$

So $\frac{-3}{5-i} \cdot \frac{5+i}{5+i} = \frac{-15-3i}{25+5i-5i-i^2}$

Which simplifies to $\frac{-15-3i}{25-(-1)} = \frac{-15-3i}{26}$