# CALCULUS

## *Chapter 1 –Introduction to the Calculus*

(*Material adapted from Chapter 1 of your text*)

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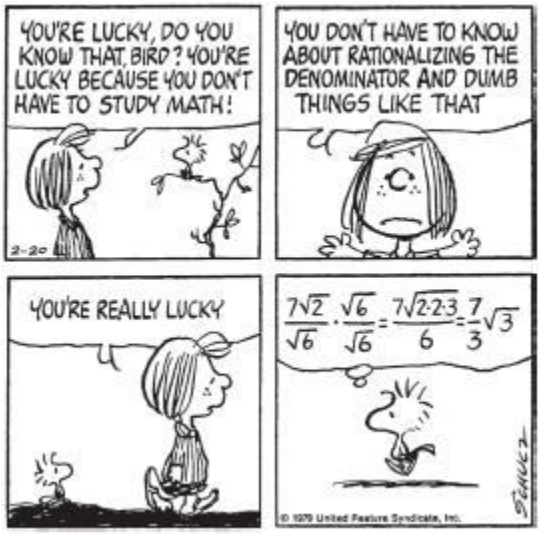
# Chapter 1 – Introduction to Calculus

*Contents with suggested problems from the Nelson Textbook (Chapter 1)*

# 1.1 Radical Expressions: Rationalizing




In the above cartoon Peppermint Patty calls the bird lucky for not having to know how to rationalize radicals (square roots, really). As it turns out, the Woodstock is actually lucky because he *can* rationalize. In Calculus being able to rationalize a denominator (or a numerator) is a necessary skill, and so we'll spend a little time honing that skill.

**Definition 1.1.1**

The **conjugate** of a binomial expression $a+b$ is $a-b$.

**Example 1.1.1**

Determine the conjugate of

a) $5-\sqrt{3x}$ b) $\sqrt{2x^2}+\sqrt{10}$

We can use the conjugate to **rationalize** a binomial expression which contains square roots. That is to say, we can **eliminate the square roots** (the irrational part) of a binomial expression (sort of).

**Example 1.1.2**

Rationalize the denominator of $\dfrac{3+2x}{\sqrt{8+h}-\sqrt{h}}$

Note: Only "conjugate" the part of the expression indicated. So, in this example, **leave the numerator alone**. Also remember **FACTORED FORM IS YOUR FRIEND.**

**Example 1.1.3**

Rationalize the numerator of $\dfrac{\sqrt{7}+5}{3\sqrt{7}-6}$.

*Class/Homework for Section 1.1*

*Pg. 9 #2, 3, 5 – 7*