Lesson #5

The 2nd and ALPHA keys

As mentioned before, to access the 2nd and 3rd function of a button use the 2nd and ALPHA keys.

Using the 2nd key

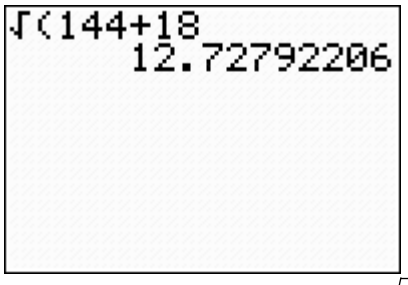
Radical Expressions

Radical expressions contain a $\sqrt{\ }$ symbol. Two parts of a radical are shown below:

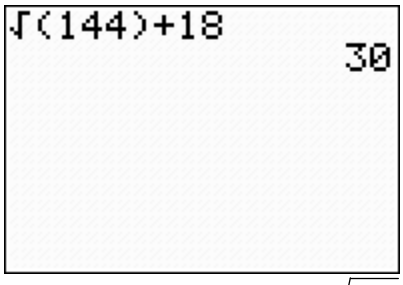
index → $\sqrt[n]{x}$ ← radicand

To enter a radical symbol into your calculator, press 2nd x^2. Even though the index does not appear, the index to the radical is 2. The radical will find the square root of the radicand contained within it. When entering a radical expression into the calculator, a closing parenthesis is needed to close the radical.

The screenshots below illustrate the difference between not closing the parenthesis on a radical and closing the parenthesis for the expression $\sqrt{144}+18$.



Without closing the parenthesis on $\sqrt{144}$.



Closing the parenthesis on $\sqrt{144}$.

A radical has two square roots: a negative root and a positive root. The calculator only shows the principle root. The principle square root of a radical is the positive square root.
Entering in radicals with indexes higher than 2 will be discussed in a future section.

Set 1 – Find the principle square root for each expression below.

LP#1 $\sqrt{225}=$	$\sqrt{400}=$	$\sqrt{289}=$	$\sqrt{225}=$
LP#2 $\sqrt{196}=$	$\sqrt{361}=$	$\sqrt{961}=$	$\sqrt{729}=$
R#1 $\sqrt{256}=$	$\sqrt{529}=$	$\sqrt{625}=$	$\sqrt{841}=$
R#2 $\sqrt{324}=$	$\sqrt{441}=$	$\sqrt{900}=$	$\sqrt{784}=$
R#3 $\sqrt{576}=$	$\sqrt{484}=$	$\sqrt{676}=$	$\sqrt{1024}=$

Identifying the different types of square roots.
Radical expressions will yield three types of results.

- If the radicand is a perfect square then the radical expression is a rational number.
- If the radicand is not a perfect square then the radical expression is an irrational number.
- If the radicand is a negative number then the radical expression is not a real number.

Set 2 – Find the principle square root for each expression. State whether each square root is rational, irrational, or not real.

LP#1 $\sqrt{17}=$	$\sqrt{121}=$	$\sqrt{-225}=$	$\sqrt{1000}=$
LP#2 $\sqrt{1296}=$	$\sqrt{-36}=$	$\sqrt{1444}=$	$\sqrt{32}=$
R#1 $\sqrt{-110}=$	$\sqrt{1600}=$	$\sqrt{-4}=$	$\sqrt{56}=$
R#2 $\sqrt{160}=$	$\sqrt{2025}=$	$\sqrt{64}=$	$\sqrt{-16}=$
R#3 $\sqrt{2020}=$	$\sqrt{2916}=$	$\sqrt{-100}=$	$\sqrt{89}=$