CHAPTER 5 Calculator Notes for the TI-Nspire and TI-Nspire CAS

Note 5A: Powers and Roots

Powers
Press $x^2$ to square a number, variable, or expression in parentheses. To raise a number, variable, or expression in parentheses to a power, press $x^n$ and type the exponent. Press $\triangleright$ to exit the exponent template.

Roots
Press $\sqrt{x}$ to find the square root of a number, variable, or expression. Press $\triangleright$ to exit the square root template.

To find the $n$th root of any number, variable, or expression, press $\sqrt[n]{x}$. Type the value for $n$, press $\triangleright$, type in the number, variable, or expression, and press $\triangleright$ to exit the $n$th root template.

Note 5B: Drawing the Inverse of a Function

You can use construction tools in Graphs & Geometry to draw the graph of the inverse of a function. You will use the property that the graph of an inverse is the reflection of the original graph over the line $y = x$, and you will use the idea of a locus of points, which you may recall from geometry.

Enter a function as $f(x)$ and graph it. You must use a constructed line (rather than a line graphed as a function) as the reflection line. Press $\text{menu}$ and choose View | Show Grid. Then press $\text{menu}$ and choose Points & Lines | Line.

To construct the line $y = x$, you will need to click on two points to define the line. Choose two points with equal $x$- and $y$-coordinates, and use the grid as your guide. Click on the grid point for the first point, then move the

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cursor to the second point and click again. In this example, the line is defined by the points (−3, −3) and (6, 6). Press \( = \) to finish the construction and \( \text{Esc} \) to exit the Construction tool.

Now you will construct a reference point on the function and designate the line of reflection. Press \( = \) and choose Transformation | Reflection. The cursor will show a point. Click on the graph of your function, and then click on the line \( y = x \) and press \( = \). The image point of the point on the function will appear. Press \( \text{Esc} \) to exit the Reflection tool.

Click and drag the point on the original function. The reflected point will change dynamically and show the shape of the inverse relation. To see a graph of the inverse, construct the locus of all possible positions for the image point. Press \( = \) and choose Construction | Locus. Click on the image point and press \( = \), and then click on the point on the original function. The graph of the inverse relation will appear. Press \( \text{Esc} \) and then press \( = \) to exit the Reflection tool.
**Note 5C: Logarithms and Antilogs**

**Logarithms**
To find the common, or base 10, logarithm of a number, press $\text{log}$ and type a positive number. The handheld can also find logarithms that are not base 10. For example, to find $\log_{5}125$, press $\text{log}$, then $5 \rightarrow 125$.

**Antilogs**
Press $\text{antilog}$ to find the common antilog of the number. Pressing $10 \rightarrow \text{antilog}$ has the same result as pressing $\text{antilog}$.

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**Note 5D: Gathering Temperature Data**

You will need an EasyTemp probe.

Press $\text{menu}$ and choose New Document. Connect the EasyTemp probe to the handheld. The handheld will automatically open the Auto Launch dialog box. Choose Lists & Spreadsheet from the Auto Launch dialog box, and press $\text{Enter}$. The handheld will show an active sensor.

Press $\text{menu}$ and choose Experiment | Set Up Collection | Time Graph. Type 10 in the Time Between Samples box and type 180 in the Experiment Length box. Press $\text{Enter}$.

Follow the instructions in your textbook to determine what data to collect. Press $\text{Enter}$ to begin collecting data. The handheld stops automatically.

If you are not satisfied with the data, press $\text{menu}$ and choose Experiment | Start Collection to repeat the experiment. A new experiment will begin immediately after you decide to store or discard your previous data.

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Note 5D: Gathering Temperature Data (continued)  

Once you are satisfied with your experiment, press ▶ to highlight the Close button in the upper-right corner of the data collection console. Press Í to close the data collection console. To get the data collection console back after closing it, press ON/D.

For the first set of data collected, the time lapsed is in column \textit{dc01.time} and the corresponding temperature is in column \textit{dc01.temp1}. Rename these columns \textit{t} and \textit{p}.

![Data Table](image)

The data from the EasyTemp probe is stored in lists, which can be accessed in the Calculator application by pressing \text{ABN}. To share this data with someone else, see Note 1H.