



MI Math Community's January  
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## Families of functions modular course

**How can we help teachers and their students during the current “virtual teaching” era?**

An online video graphing course! Created by two mathematics educators that combine over 40 years of successful high school mathematics teaching, this course helps students learn how to graph 13 parent functions and 6 transformations of each of these parent functions. Use 200+ colorful, interactive videos that permit students to explore at their own pace. And it is modular – students only use the videos that they need. This free course works with any graphing technology or no graphing technology.

These videos were carefully designed using two different pedagogical approaches: graphing by table and graphing by a “dance” (pattern recognition). Using proper mathematical language is emphasized.

**Here are the 13 parent functions (so far), followed by the 6 transformations:**

01 $y = x^2$	02 $y =  x $	03 $y = \sqrt{x}$	04 $y = \frac{1}{x}$	05 $y = x^3$
06 $y = \sqrt[3]{x}$	07 $y = 2^x$	08 $y = \left(\frac{1}{2}\right)^x$	09 $y = e^x$	10 $y = \ln(x)$
11 $y = \sqrt{r^2 - x^2}$	12 $y = [x]$	13 $y = f(x)$ generic, piecewise		

Vertical shifts:  $f(x) + a$

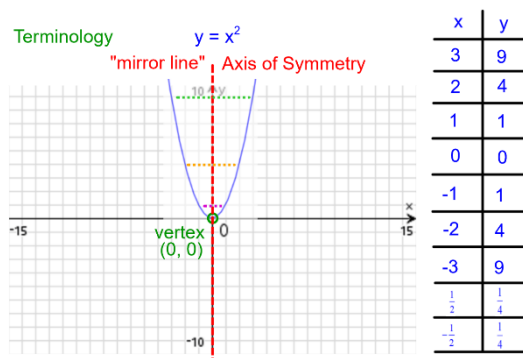
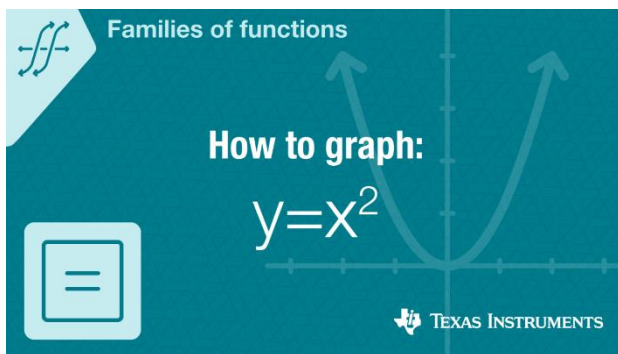
Horizontal stretch/shrink:  $f(a \cdot x)$

Horizontal shifts:  $f(x - a)$

Opposite of  $f(x)$ :  $-f(x)$

Dilations (vertical):  $a \cdot f(x)$

$f$  at the opposite of  $x$ :  $f(-x)$



**Here are links to the course and more information:**

- < The Families of Functions website: [bit.ly/fofTI](http://bit.ly/fofTI) or [education.ti.com/en/resources/family-of-functions](http://education.ti.com/en/resources/family-of-functions)
- < A one-page PDF that explains the course [bit.ly/fofTlexplain](http://bit.ly/fofTlexplain)

**Special just for Michigan Council of Teachers of Mathematics members:** The Linear Relations and Slope Module is almost completed. Be among the first to use the videos before they are posted on the FoF website at [bit.ly/FoF\\_lines](http://bit.ly/FoF_lines)  
 Contact co-creator Tom Reardon with questions, comments, suggestions: [tom@tomreardon.com](mailto:tom@tomreardon.com)

Contact your local TI Education Technology Consultant Michelle Grooms for support or information on Texas Instruments' classroom solutions & resources at 614-306-1455 or [mgrooms@ti.com](mailto:mgrooms@ti.com).