



## Desmos and GeoGebra: Great for Teachers and Students

**Desmos** is a free online graphing calculator (and it operates like a graphing calculator - without the menus!!)

**GeoGebra** is a free program that can be used as a graphing calculator, dynamic geometry package, or CAS (Computer Algebra System, including Calculus).



### Advantages of Both Desmos and GeoGebra

- Free
- Syntax is like we write on paper. For example, you type:
  - $f(x) = 2x + 3$
  - $f(4)$
  - Can graph *inequalities* (in two variables).  $y \geq 2x + 5$
- Very intuitive – easy to use
- Shift-mouse drag to move axes
- Mouse roller ball to zoom in/out.
- You can graph *relations* (e.g.,  $x^2 + y^2 = 3$ ). Big step up from just  $Y=$ .
- You can use colors.
- Can *save* your work (files).

Desmos	GeoGebra
Biggest Strengths: <ul style="list-style-type: none"> <li>▪ Cross platform. Runs on anything. Runs in browser.</li> <li>▪ They are working hard to make it educational.</li> <li>▪ Very intuitive.</li> </ul>	Biggest Strengths: <ul style="list-style-type: none"> <li>▪ High quality, full-featured, 21<sup>st</sup> Century mathematical software.</li> <li>▪ Powerful combination of geometry and algebra (up to calculus).</li> <li>▪ Ease of use.</li> </ul>
Dynamic, using sliders (e.g., coefficients)	Dynamic, click and drag. (or sliders)
<a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a> (created by Desmos)	<a href="https://tube.geogebra.org/">https://tube.geogebra.org/</a> ( <i>Sharing area</i> )
	Everything is treated geometrically <i>and</i> algebraically. (circles being an example)
	Everything is automatically measured.

### Tips for Desmos:

- ✓ Use the *wrench*. Use **Projector Mode** (to project in class).
- ✓ Follow the iPad rule-of-thumb: *Touch it!* (for example, to see the maximum point)
- ✓ Colors are easy to change. With systems this is nice.

### Tips for GeoGebra:

- ❖ After you click a tool (at the top), *hover* over the tool to see how to use it. This may be the thing I like about GeoGebra the most!
- ❖ The Selection Tool (arrow). Get in the habit of going back to it (one way is to hit ESC).
- ❖ Use the command line.
  - When you start typing, it will tell you the syntax. ☺
- ❖ Right-Click *Object Properties* is used often. Many nice properties
- ❖ It will run in the browser, or you can download it and run it from your computer (sans internet). I prefer the latter.
- ❖ Edit|*Graphics View to Clipboard* is great for creating graphics for worksheets and tests.