


# 2D Plots of Functions and Expressions

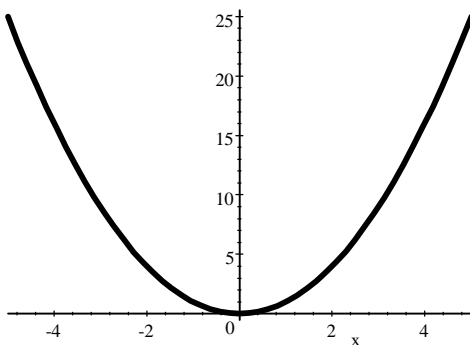
In the equation  $f(x) = x^2$ , each of the two sides— $f(x)$  and  $x^2$ —is an *expression* while  $f$  is a *function*. The function  $f$  is a rule that assigns to each number the product of that number and the sine of that number. Thus the function  $f$  defined by the equation  $f(x) = x^2$  is the same function as the function  $g$  defined by the equation  $g(t) = t^2$ . The expression  $x^2$  (or  $f(x)$ ) is different from the expression  $t^2$  (or  $f(t)$ ), since  $x^2$  is tied to the variable  $x$ , and  $t^2$  is tied to the variable  $t$ .

## Expressions== Plotting

- ▶ To plot one or more expressions involving a single variable
  1. Enter the expression(s)  $f(x) = x^2$  in your document. If you want to plot several expressions at once, enter them separated by (red) commas.
  2. With the insertion point in an expression or list of expressions, click , or from the **Plot 2D** submenu choose **Rectangular**.

### ▶ Plot 2D + Rectangular

$x^2$



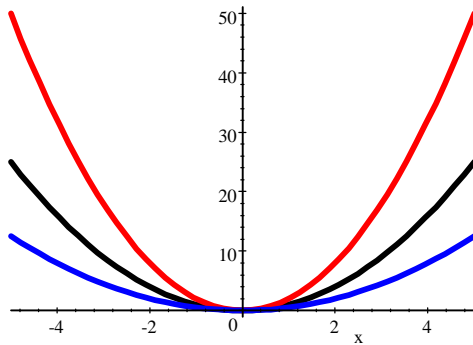
Add the Label  $y = x^2$  by typing it into the **Plot Properties** + **Labelling** tabbed dialog in the

**Caption Text** entry field.

- ▶ To add an expression to a 2D plot
- Select the expression with the mouse and drag it onto the plot.
  - ▶ **Plot 2D + Rectangular**
  - ▶ Select and drag to the frame

$2x^2$  and  $\frac{1}{2}x^2$

▶ Revise **Plot Components** page, **Item Number: 2**, **Line Color: Red**, **Item Number: 3**, **Line Color: Blue**



You can also add expressions with **Add Item** in the **Plot Properties** tabbed dialogs, as described earlier.



### Plotting Defined Functions

You can plot a defined function in two different ways. Recall that you define a function such as  $f(x) = x^2$  by placing the insertion point in the expression and choosing **New Definition** from the **Define** submenu.

- ▶ To plot a defined function  $f$  of one variable
  1. Select the function name  $f$  or select the expression  $f(x)$ .
  2. From the **Plot 2D** submenu, choose **Rectangular**.

$f$

