Maple Homework 1 - Maple Fundamentals Guide

Your Name

Please watch the first 30 minutes of the Maple Fundamentals Video at https://www.maplesoft.com/support/training/quickstart.aspx

As you watch the video, enter the examples in the Maple Worksheet below exactly as they appear in the video. The above webpage also has a pdf file of the commands used (it is also available on Blackboard and is called MapleFundamentalsGuide.pdf). I recommend downloading it as well for your reference. The times in parentheses give the approximate time in the video for each example.

When you are done, please save your Maple file and also select "Print" and then "Save As PDF" to export your worksheet as a pdf file. Upload both your .mw and .pdf files to turn in.

Talking to Maple (1:00)

Using [ENTER] or [ALT-ENTER (Option-Return on Mac)] (1:00)

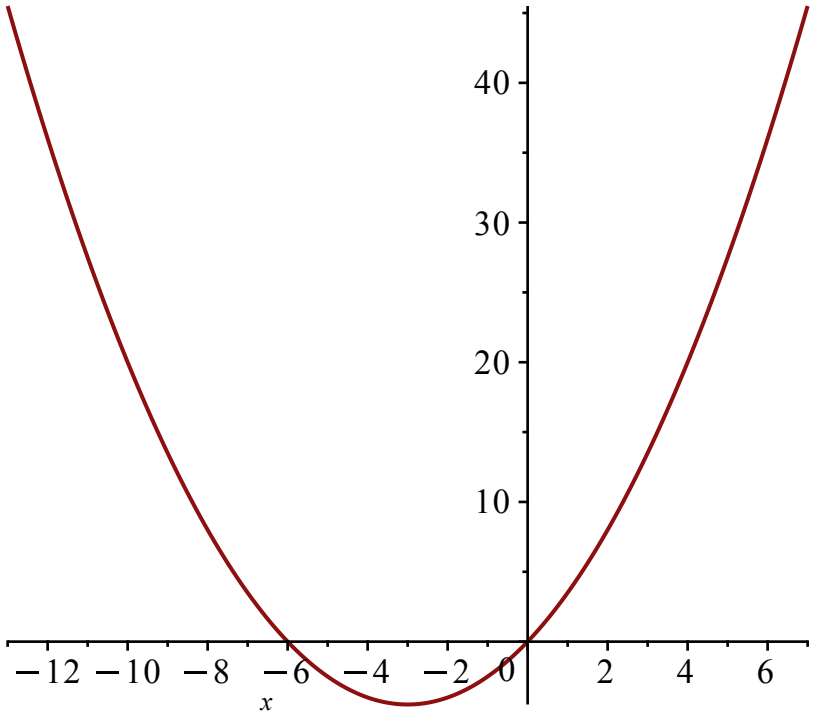
$1 + 1$

$$2 \qquad \textbf{(1.1.1)}$$

$1 + 2 + 3 = 6$

Context Panel (1:30)

$$x + 3 \xrightarrow{\text{integrate w.r.t. x}} \frac{1}{2} x^2 + 3 x \rightarrow$$



Smart Popups (3:30)

$\sin(2x)$ $\xrightarrow{\text{Double Angle Identity: sin(2*x)=2*sin(x)*cos(x)}}$

$$2\sin(x)\cos(x) \qquad \textbf{(1.3.1)}$$

Entering Math (3:50)

$\sqrt{\pi}\sqrt{\pi}$ $\xrightarrow{\text{at 100 digits}}$

1.772453850905516027298167483341145182797549456122387128213807789852911284591032181\
37495065673854466 5

Entering Fractions (3:50)

$0.33x + \frac{1}{3}x$

$$6.63 \times 10^{-1} x \qquad \textbf{(2.1.1)}$$

Exact Answers and Numeric Approximations (4:30)

Palettes (6:00)

$\int_1^5 fx\,dx$

$$12f \qquad \textbf{(2.3.1)}$$

Entering Symbols Using Symbol Completion (7:00)

$\sqrt{x}\,e$

Case-Sensitivity (9:30)

$x + x$

$$2x \qquad \textbf{(2.5.1)}$$

$x + X$

$$x + X \qquad \textbf{(2.5.2)}$$

Multiplication (10:00)

$3x + 4x$

$$7x \qquad \textbf{(2.6.1)}$$

Mathematical Notation (12:00)

Label References (13:15) Note: the label reference command is [Command-L] on Mac, [Ctrl-L] on PC

Variable Assignment (14:30)

Defining Functions (16:00)

$f := x \to x^2$

$$f := x \mapsto x^2 \qquad \textbf{(2.10.1)}$$

$f(3)$

$$9 \qquad \textbf{(2.10.2)}$$

$f(x + 3y)$

$$(x + 3y)^2 \qquad \textbf{(2.10.3)}$$

expand

$$x^2 + 6yx + 9y^2 \qquad \textbf{(2.10.4)}$$

Adding Text

Note: instead of using the function key F5 to switch between math and text mode, you can click on the Text and Math buttons just above the main window on the worksheet.

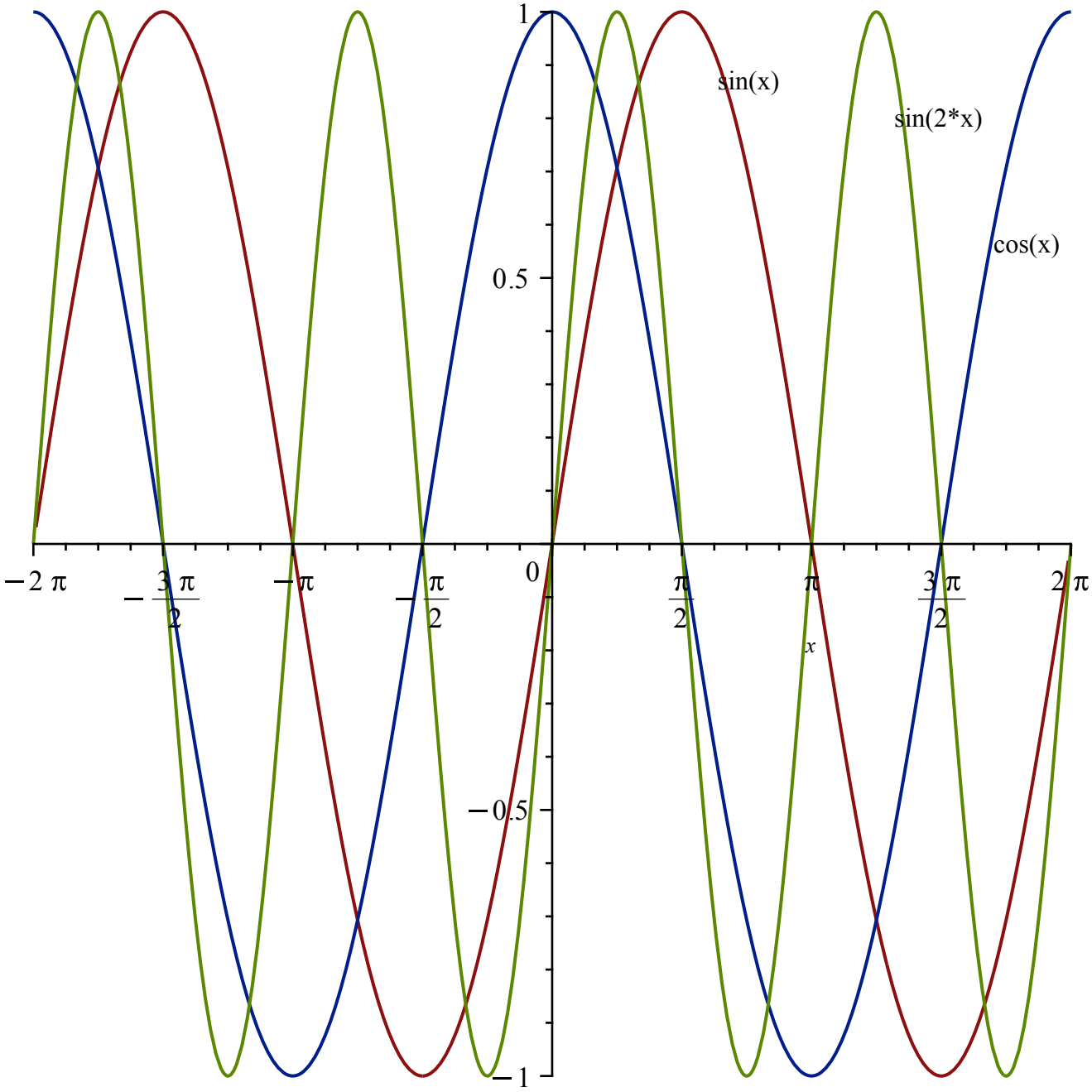
Also note: instead of pressing shift-F5 to switch to non-executable math, you can right-click (control-click on Mac) on the math expression, and then select "Executable Math" to toggle it on and off.

we can express the solution as

Plotting (22:00)

2-D Plots (22:00)

$\sin(x) \rightarrow$



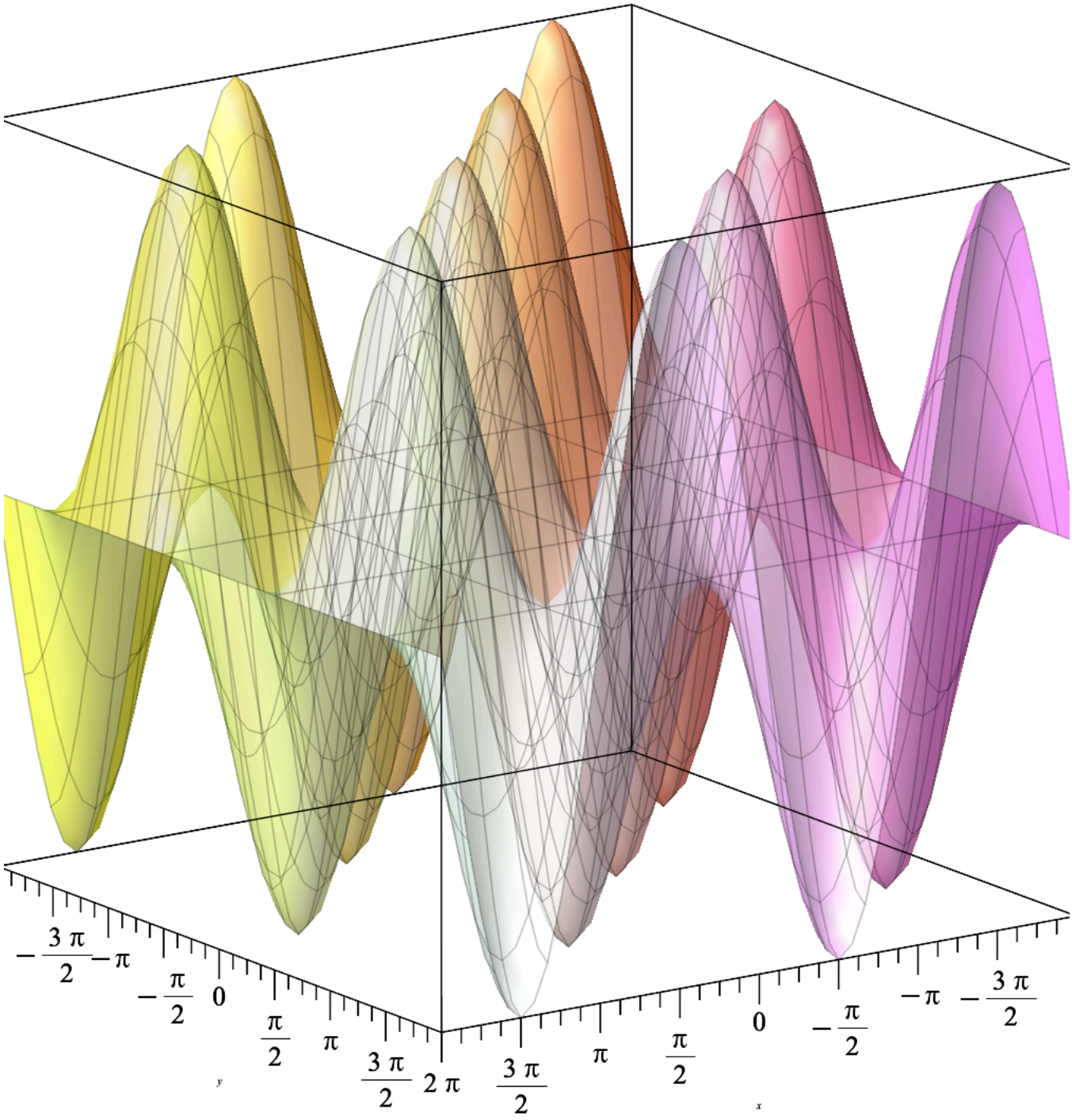
Combining Plots (23:00)

$\cos(x)\ \sin(2 \cdot x)$

Annotating Plots (23:45)

3-D Plots (24:45)

$\sin(x)\cdot\cos(y)\ \rightarrow$

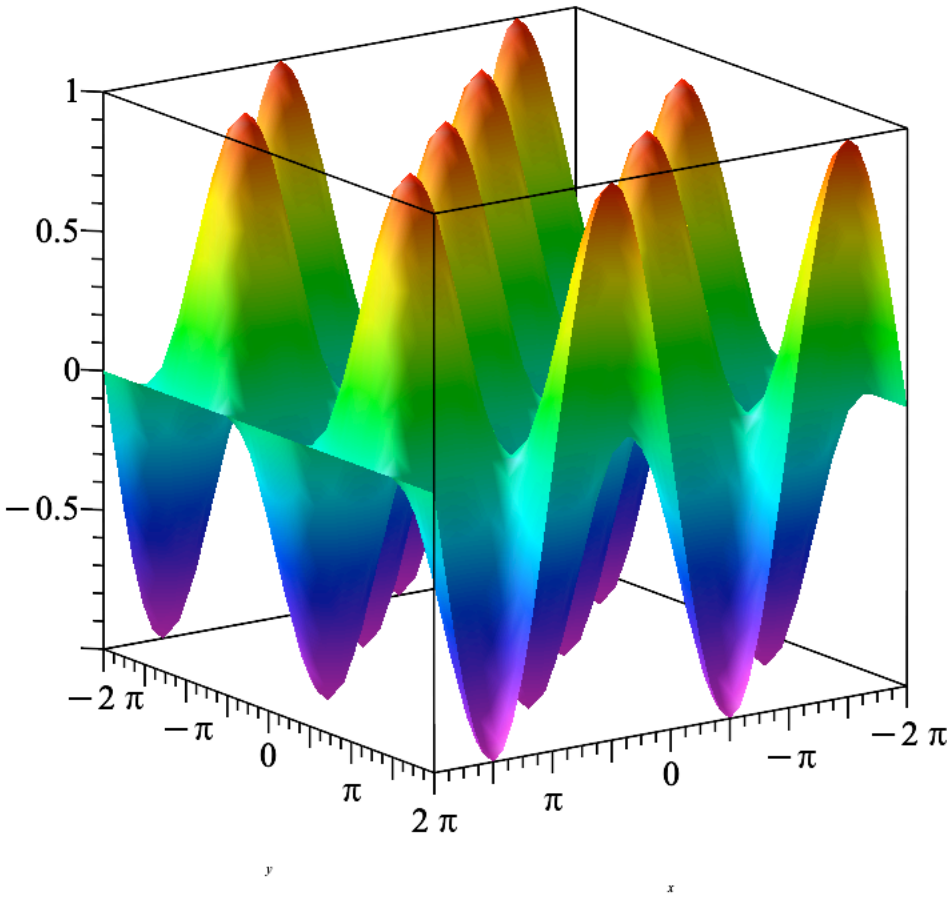

$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
0
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
y
$\frac{3\pi}{2}$
π
$\frac{\pi}{2}$
0
$-\frac{\pi}{2}$
$-\pi$
$-\frac{3\pi}{2}$
x

Plot Options (25:30)

Plot Builder (25:45)

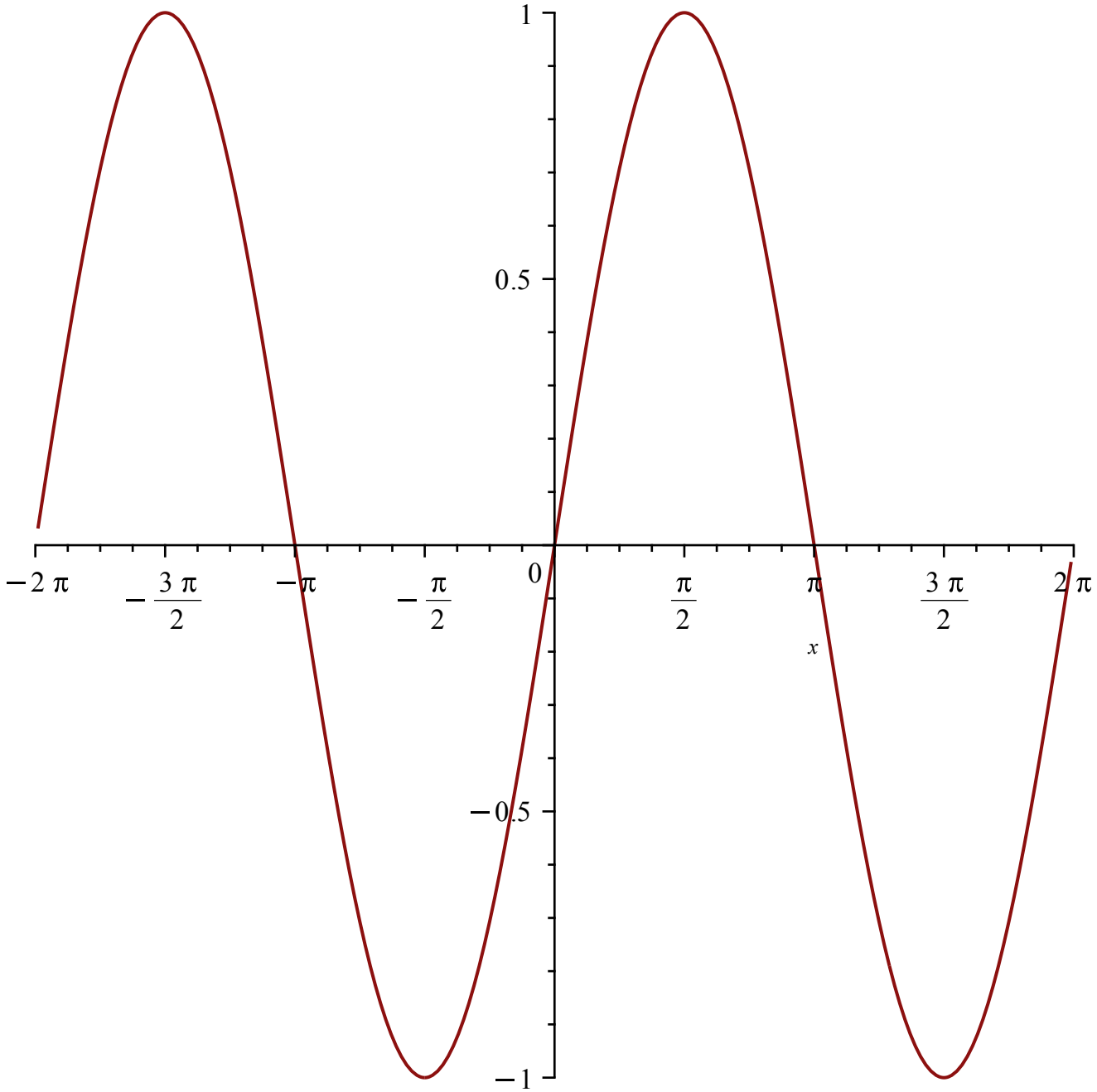
$\sin(x)\cdot\cos(y)\ \rightarrow$

$$\sin(x)\ \cos(y)$$

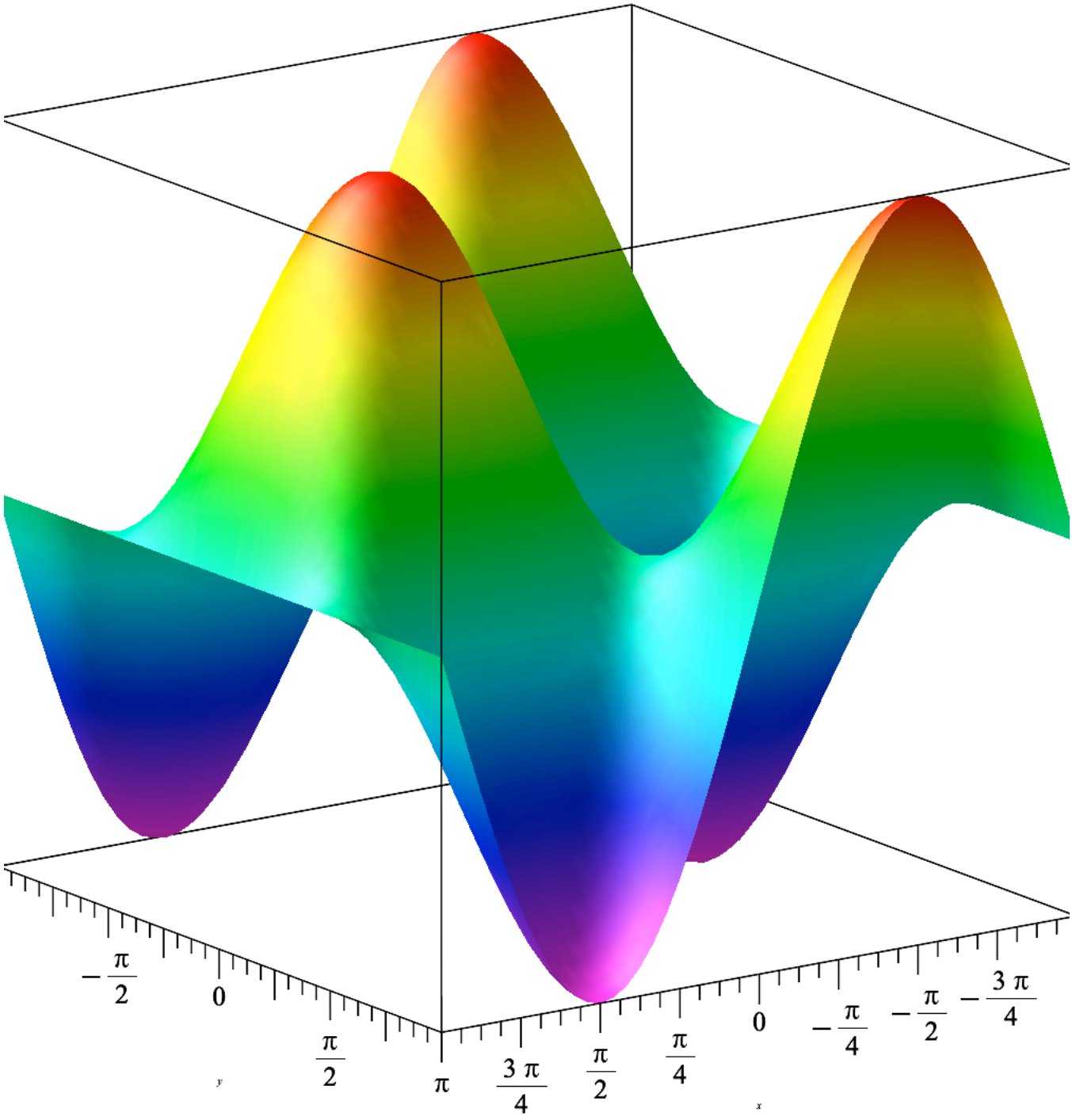


Using Plotting with Commands (27:00)

$plot(\sin(x), x = -2\cdot\pi..2\cdot\pi)$



$plot3d\left(\sin(x)\cdot\cos(y), x = -\pi..\pi, y = -\pi..\pi, shading = zhue, style = surface\right)$


$-\frac{\pi}{2}$
0
$\frac{\pi}{2}$
y
π
$\frac{3\pi}{4}$
$\frac{\pi}{2}$
$\frac{\pi}{4}$
0
$-\frac{\pi}{4}$
$-\frac{\pi}{2}$
$-\frac{3\pi}{4}$
x

Assistants, Tutors and Math Apps (28:00)

Using the Exploration Assistant (28:00)

$\sin(a \cdot x) \cdot \exp(-b \cdot y)$