

## MAPLE EXERCISES

Version 2.20.04

1.(a) Find

$$\frac{3 + 10}{3}$$

(b) Find the numerical value of this expression.

(c) Find the numerical value of this expression to 20 decimal places.

2. Find  $\sin \pi/4$ .

3. (a) Find the numerical value of  $\pi$ .

(b) Find the numerical value of  $\pi$  to as many decimal places as you can using Maple. (How many is this?)

(c) Do the digits of  $\pi$  look random, or are there patterns? (This is unknown.)

4. Solve the equation  $x^2 + 22 - 2 = 0$  for  $x$ . Is the answer what you would expect?

5. Solve the system of equations below for  $x$  and  $y$ :

$$3x - 2y = 1$$

$$x + 4y = 2$$

By hand, check that the answer satisfies the original equations.

6. Expand the expressions  $(x + y)^2$ ,  $(x - y)^3$ , and  $(x + y)^{100}$ .

7. Simplify the expression  $\sin^3 t + \sin t \cos^2 t$ .

8. Plot the graph of  $\cos(2t)$  for  $-2\pi \leq t \leq 2\pi$ .

9. Plot the graphs of  $\cos t$  and  $\sec t$  on the same axis for  $0 \leq t \leq \pi$ .

10. Find the derivative of

$$\frac{(5x^2 + 3)(4x^3 + 7x)}{(2x - 3 + x)}$$

11. Find an antiderivative of  $\sin x$ , then  $\sin^2 x$ ,  $\sin^3 x$  and so forth. Is there a pattern?

12. Same question for  $e^x$ ,  $xe^x$ ,  $x^2e^x$  and so forth.