

Problems

Answers to problems marked with an asterisk are given at the end of the text.

Section 1.1

1. Make sure you know how to start and quit a MATLAB session. Use MATLAB to make the following calculations, using the values $x = 10$, $y = 3$. Check the results by using a calculator.

a. $u = x + y$ b. $v = xy$ c. $w = x / y$
d. $z = \sin x$ e. $r = 8 \sin y$ f. $s = 5 \sin (2y)$

- 2.* Suppose that $x = 2$ and $y = 5$. Use MATLAB to compute the following.

a. $\frac{yx^3}{x - y}$ b. $\frac{3x}{2y}$ c. $\frac{3}{2}xy$ d. $\frac{x^5}{x^5 - 1}$

3. Suppose that $x = 3$ and $y = 4$. Use MATLAB to compute the following, and check the results with a calculator.

a. $\left(1 - \frac{1}{x^5}\right)^{-1}$ b. $3\pi x^2$ c. $\frac{3y}{4x - 8}$ d. $\frac{4(y - 5)}{3x - 6}$

4. Evaluate the following expressions in MATLAB for the given value of x . Check your answers by hand.

a. $y = 6x^3 + \frac{4}{x}$, $x = 3$ b. $y = \frac{x}{4} 3$, $x = 7$

c. $y = \frac{(4x)^2}{25}$, $x = 9$ d. $y = 2 \frac{\sin x}{5}$, $x = 4$

e. $y = 7(x^{1/3}) + 4x^{0.58}$, $x = 30$

5. Assuming that the variables a , b , c , d , and f are scalars, write MATLAB statements to compute and display the following expressions. Test your statements for the values $a = 1.12$, $b = 2.34$, $c = 0.72$, $d = 0.81$, and $f = 19.83$.

$$x = 1 + \frac{a}{b} + \frac{c}{f^2}$$

$$s = \frac{b - a}{d - c}$$

$$r = \frac{1}{\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d}}$$

$$y = ab \frac{1}{c} \frac{f^2}{2}$$

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Problems 1, 3, and 5