

MATH.2720 Introduction to Programming with MATLAB
Some Useful Built-In Functions

MATLAB Operator	Description
*	Multiplication, e.g. 4*3
/	Division, e.g. 12/4
^	Raise to a power, e.g. 2^4

Function	MATLAB Syntax
\sqrt{x}	sqrt(x)
$\sqrt[n]{x}$	nthroot(x,n)
$ x $	abs(x)
$n!$	factorial(n)
e^x	exp(x)
$\ln(x)$	log(x)
$\log_{10}(x)$	log10(x)
$\sin(x)$	sin(x) if x is in radians sind(x) if x is in degrees
$\cos(x)$	cos(x) if x is in radians cosd(x) if x is in degrees
$\tan(x)$	tan(x) if x is in radians tand(x) if x is in degrees
$\sin^{-1}(x)$	asin(x) gives the result in radians asind(x) gives the result in degrees
$\cos^{-1}(x)$	acos(x) gives the result in radians acosd(x) gives the result in degrees
$\tan^{-1}(x)$	atan(x) gives the result in radians atand(x) gives the result in degrees

MATLAB Command	Description
round(x)	Round to the nearest integer
fix(x)	Round toward 0
ceil(x)	Round toward ∞
floor(x)	Round toward $-\infty$

Practice Problems (Gilat, *MATLAB: An Introduction with Applications*)

1. Calculate $\frac{14.8^2 + 6.5^2}{3.8^2} + \frac{55}{\sqrt{2} + 14}$
2. Calculate $(-3.5)^3 + \frac{e^6}{\ln(524)} + 206^{1/3}$
3. Calculate $\frac{\sin\left(\frac{7\pi}{9}\right)}{\cos^2\left(\frac{5\pi}{7}\right)} + \frac{1}{7} \tan\left(\frac{5\pi}{12}\right)$
4. Calculate $\frac{\tan(64^\circ)}{\cos^2(14^\circ)} - \frac{3 \sin(80^\circ)}{\sqrt[3]{0.9}} + \frac{\cos(55^\circ)}{\sin(11^\circ)}$
5. Define the variables $a, b, c,$ and d as follows: $a = 13, b = 4.2, c = 4b/a$ and $d = \frac{abc}{a + b + c}$.
Evaluate $\frac{\sqrt{a^2 + b^2}}{d - c} + \ln(|b - a + c - d|)$

Answers (rounded to 4 decimal places)

1. 21.6630
2. 27.4611
3. 2.1867
4. 2.1238
5. 7.8410