

Organizational commands

diary saves subsequent input and (most) output in the command window to a text file.
diary <filename> saves to the named file (if not specified, the default name is “diary”).
diary off turns the recording off.
diary on turns the recording on; subsequent output is appended to the previously named file.
, separates multiple statements on the same line; output will appear on the screen.
; prevents the output of the command it follows from being displayed on the screen.
... at the end of a line indicates that the next line will be a continuation of the current one.
% begins a comment; all text on a line after the % character is ignored by Matlab.

Scalar arithmetic operations

+ addition
- subtraction
***** multiplication
^ exponentiation
/ division

Variables

Variable names are case sensitive;
 must start with a letter, which can then be followed by any combination of letters, numbers and underscores.
ans is the default variable name to which the most recent calculation result is assigned, if another variable name has not been specified.
= assigns the value of the right-hand side to the variable on the left-hand side.
who lists all current variables in the workspace.
whos lists all current variables, showing the size and type of each.
clear <var> removes the variable <var> from the workspace.
clear all removes all existing variables.
<var>=input('<prompt>') displays <prompt> on the screen, and then assigns whatever the user enters to the variable <var>.

Pre-defined constants (variables with values pre-assigned)

pi π
i $\sqrt{-1}$
j $\sqrt{-1}$ (engineers' notation)
eps machine precision: the smallest positive number ε for which the computer considers $1 + \varepsilon > 1$ to be true
realmax the largest positive real number representable on your computer
realmin the smallest positive real number representable on your computer
Inf or inf ∞ (overflow): returned when a computation generates a result larger than **realmax**; a result more negative than **-realmax** produces **-Inf**.
NaN or nan Not-a-Number: returned when a computation generates a mathematically indeterminate result such as $0/0$

Display formatting

`format short` 4 decimal places
`format long` 15 decimal places
`format short e` scientific notation ($a \times 10^p$), with 4 decimal places in the mantissa a
`format long e` scientific notation, with 15 decimal places in the mantissa
`format short g` the better looking of `format short` or `format short e`
`format long g` the better looking of `format long` or `format long e`

`disp(<var>)` displays the value of the variable `<var>` without first printing its name and =.
`disp('<string>')` displays `<string>` on the screen.

`fprintf('<string>', <list of variables>)`
displays `<string>` according to the formatting instructions it contains (with each format specifier preceded by %) for each member of the `<list of variables>`.
Format specifiers: **d** integer
 f conventional floating point (decimal) notation
 e scientific notation

The integers preceding the **d**, **f** or **e** specify the width of the displayed value, e.g. `%10.6f` allocates a total of 10 characters for displaying the value: 6 after the decimal point, 1 for the decimal point, and 3 for the integer part.
Use `\n` to initiate printing on a new line.

Some built-in functions

`sqrt(x)` square root
`nthroot(X,n)` real n th root $\sqrt[n]{X}$
`exp(x)` exponential e^x
`log(x)` natural logarithm $\ln x$
`log10(x)` common (i.e. base-10) logarithm $\log_{10} x$
`log2(x)` base-2 logarithm $\log_2 x$
`factorial(n)` $n!$
`round(x)` the integer closest to x
`floor(x)` the largest integer that is less than or equal to x
`ceil(x)` the smallest integer that is greater than or equal to x
`abs(z)` absolute value (modulus) $|z|$
`angle(z)` argument (angle) of a complex number
`real(z)` real part of a complex number
`imag(z)` imaginary part of a complex number
`conj(z)` complex conjugate of z

Trigonometric functions

<code>sin</code>	<code>cos</code>	<code>tan</code>	<code>cot</code>	<code>sec</code>	<code>csc</code>	(radians)
<code>sind</code>	<code>cosd</code>	<code>tand</code>	<code>cotd</code>	<code>secd</code>	<code>cscd</code>	(degrees)

Inverse trig functions

<code>asin</code>	<code>acos</code>	<code>atan</code>	<code>acot</code>	<code>asec</code>	<code>acsc</code>	(radians)
<code>asind</code>	<code>acosd</code>	<code>atand</code>	<code>acotd</code>	<code>asecd</code>	<code>acscd</code>	(degrees)

Hyperbolic functions and their inverses

<code>sinh</code>	<code>cosh</code>	<code>tanh</code>	<code>coth</code>	<code>sech</code>	<code>csch</code>
<code>asinh</code>	<code>acosh</code>	<code>atanh</code>	<code>acoth</code>	<code>asech</code>	<code>acsch</code>