

I'LL BE IN LAB THIS FR I 5-6:30 pm.

VARIABLE NAMES

→ START WITH A LETTER

CAN HAVE A # AS

NO SPACES OR DASHES

CASE SENSITIVE → T for Temperature

e.g. t for time

X
y

SHORT, DESCRIPTIVE

STANDARD, BUILT-IN FUNCTIONS

e.g., $\tan(\pi)$ →

↑
STANDARD
CONSTANT
FOR π

IN MATLAB'S FUNCTION LIBRARIES
THERE IS AN M-FILE, `tan.m`

$\tan(\pi)$ →

↑
INPUT ARGUMENT

→ RETURNS TO OUR PROGRAM
VALUE OF TANGENT OF
ANGLE OF π RADIANS

TYPES & VALUES

DOUBLE PRECISION FLOATING PT. → DEFAULT TYPE

CHAR (METER) e.g. 'A', 'a', '1'

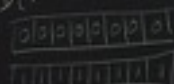
STRING (OF CHARACTERS) myName = 'Rich'

INTEGER int 8, int 16, ...

uint 8, uint 16, ...

UNSIGNED (NO + OR -) BYTE

uint 8 → 8 BITS



LOGICAL
TRUE
FALSE

uint 8 CAN REPRESENT
INTEGERS IN RANGE 0-255

256 VALUES

USES 64 BITS



↑
1 FOR
+/- SIGN

52 BITS

'SIGNIFICAND'

2.5635000

11 BITS

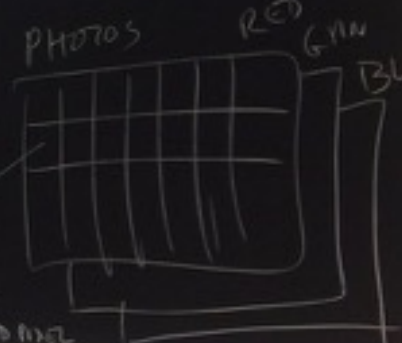
'EXPONENT'

+5

2.5635 × 10⁵

2.5635E5

OR E5, E+5, E+05



CHAP 2

a = 5 % SCALAR

b = [1 3 5] % ROW VECTOR,
AN ARRAY

OR b = [1, 3, 5]

c = [1
2
3] % COLUMN VECTOR.

OR c = [1; 2; 3]

% STARTS A COMMENT

%% STARTS A CODE SECTION

clear

d = [1 3
5 7] % A 2x2 MATRIX

ELEMENT IN ROW 1, COL 2

OR d = [1 3; 5, 7]

d = [1 3 5
7 9 11];

d(1,:) ~> 1 3 5

d(1,2:3) ~> 3 5

d(1,2) -> DISPLAYS 3

d(2,2) -> " 7

d(:,2) -> 3
7

CHEMICAL REACTOR

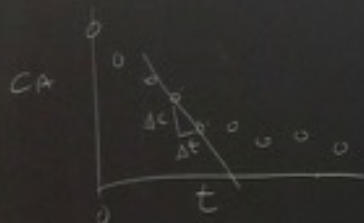


TEST RATE EQUATION

$$r_A = -k C_A$$

Annotations:
 - r_A : RATE OF REACTION OF A PER UNIT VOLUME
 - C_A : CONC. OF REACTANT A
 - k : RATE COEFFICIENT.

MEASURE CONC OF A vs. time



BALANCE ON A OVER REACTOR

$$V \frac{dC_A}{dt} = -k C_A V$$

$\frac{dC_A}{dt}$: RATE OF CHANGE OF CA vs. TIME

APPROXIMATE WITH DIFFERENCE EQUATION

$$\frac{dC_A}{dt} \approx \frac{C_A^{t+\Delta t} - C_A^t}{(t+\Delta t) - t}$$

PASTE IN SCRIPT
 $d = [\dots];$

DATA FILE

Q	V	CA	CP
0	100	50	0
...

$ca = d(:, 3);$