

DAILY ASSESSMENT FORMAT

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Course:	MATLAB Onramp	USN:	4a17ec083
Topic:	Course Overview, Commands, MATLAB Desktop and Editor, Vectors and Matrices	Semester & Section:	6th /b
GitHub Repository:	sahanasr-course		

SESSION DETAILS

Image of session

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The screenshot shows the MATLAB Onramp interface for the '4.3 Array Creation Functions' task. The task pane on the left provides instructions: 'Use the `zeros` function to create a matrix of all zeros that has 6 rows and 3 columns (6-by-3). Assign the result to a variable named `x`.' The main editor area displays the MATLAB code editor with three tasks: Task 1 (`x = rand(5)`), Task 2 (`x = rand(5,1)`), and Task 3 (`x = zeros(6,3)`). The right pane shows the workspace with the resulting matrices for each task. The top bar indicates 'MATLAB Onramp (35% complete)' and the user 'Prashantha naik'.

Task 1

Instructions are in the task pane to the left. Complete and submit each task one at a time.

Task 1

```
1 x = rand(5)
```

Task 2

```
2 x = rand(5,1)
```

Task 3

```
3 x = zeros(6,3)
```

Further Practice

Test Results: Correct!

- ✓ Does x have the correct size?
- ✓ Does x have the correct values?

Workspace

x = 5x5

```
0.8147 0.0975 0.1576 0.1419 0.6557
0.9058 0.2785 0.9706 0.4218 0.0357
0.1270 0.5469 0.9572 0.9157 0.8491
0.9134 0.9575 0.4854 0.7922 0.9340
0.6324 0.9649 0.8003 0.9595 0.6787
```

x = 5x1

```
0.7577
0.7431
0.3922
0.6555
0.1712
```

x = 6x3

```
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
```

Report – Report can be typed or hand written for up to two pages.

Create Symbolic Numbers

You can create symbolic numbers by using sym. Symbolic numbers are exact representations, unlike floating-point numbers.

Create a symbolic number by using sym and compare it to the same floating-point number.

```
sym(1/3)
```

```
1/3
```

```
ans =
```

```
1/3
```

```
ans =
```

```
0.3333
```

The symbolic number is represented in exact rational form, while the floating-point number is a decimal approximation. The symbolic result is not indented, while the standard MATLAB® result is indented.

Calculations on symbolic numbers are exact. Demonstrate this exactness by finding sin(pi) symbolically and numerically. The symbolic result is exact, while the numeric result is an approximation.

```
sin(sym(pi))
```

```
sin(pi)
```

```
ans =
```

```
0
```

```
ans =
```

```
1.2246e-16
```

Vector, Matrix and Array Commands

The following table shows various commands used for working with arrays, matrices and vectors –

Command	Purpose
cat	Concatenates arrays.

find	Finds indices of nonzero elements.	
length	Computes number of elements.	
linspace	Creates regularly spaced vector.	
logspace	Creates logarithmically spaced vector.	
max	Returns largest element.	
min	Returns smallest element.	
prod	Product of each column.	
reshape	Changes size.	
size	Computes array size.	
sort	Sorts each column.	
sum	Sums each column.	
eye	Creates an identity matrix.	
ones	Creates an array of ones.	
zeros	Creates an array of zeros.	
cross	Computes matrix cross products.	
dot	Computes matrix dot products.	

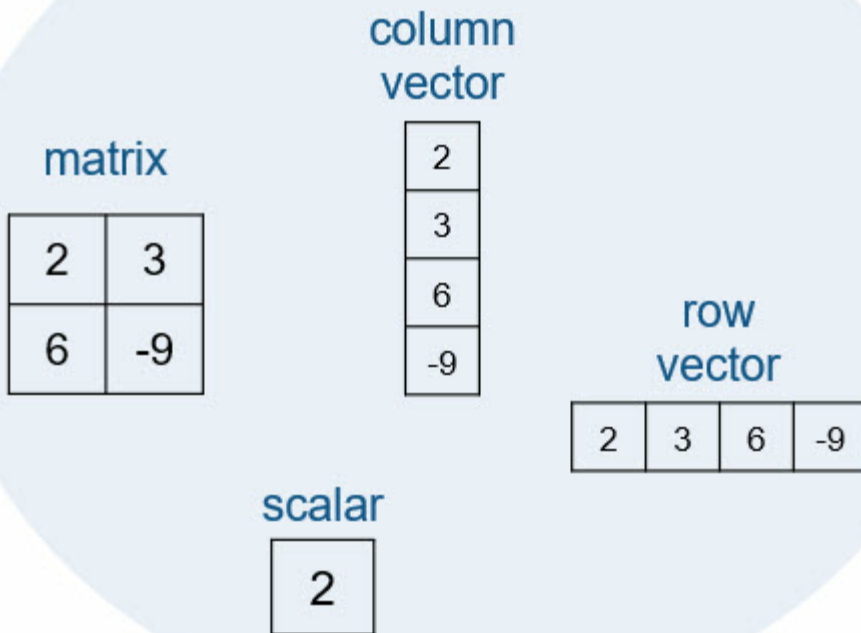
det	Computes determinant of an array.	
inv	Computes inverse of a matrix.	
pinv	Computes pseudoinverse of a matrix.	
rank	Computes rank of a matrix.	
rref	Computes reduced row echelon form.	
cell	Creates cell array.	
celldisp	Displays cell array.	
cellplot	Displays graphical representation of cell array.	
num2cell	Converts numeric array to cell array.	
deal	Matches input and output lists.	
iscell	Identifies cell array.	

What's an Array?

All MATLAB variables are *arrays*. This means that each variable can contain multiple elements. You can use arrays to store related data in one variable.

Because you'll use arrays every time you program, it's important to get to know them and the terminology used to describe them.

ARRAY



For long vectors, entering individual numbers is not practical. An alternative, shorthand method for creating evenly-spaced vectors is to use the `:` operator and specify only the start and end points.

```
y = 5:8
y =
     5     6     7     8
```

MATLAB contains many functions that help you to create commonly used matrices, such as matrices of random numbers.

```
x = rand(2)
x =
    0.8147    0.1270
    0.9058    0.9134
```

Note that the 2 in the command `rand(2)` specifies that the output will be a 2-by-2 matrix of random numbers.