Homework Quiz 1

Due 29 Sep at 6:00 **Points** 170 **Questions** 17
Available 22 Sep at 12:00 - 29 Sep at 6:00 **Time limit** None

Instructions

Feel free to check your answers in Matlab before you submit them!

This quiz was locked 29 Sep at 6:00.

Attempt history

	Attempt	Time	Score
LATEST	Attempt 1	1,941 minutes	170 out of 170

Score for this quiz: **170** out of 170
Submitted 29 Sep at 2:07
This attempt took 1,941 minutes.

Question 1 — 10 / 10 pts

What is the matrix-vector product, $\boldsymbol{Ax}$, where

$$A = \begin{bmatrix} 1 & 2 \\ -6 & 5 \\ 4 & 3 \end{bmatrix}, \; \boldsymbol{x} = \begin{bmatrix} 1 \\ 5 \\ 2 \end{bmatrix}$$

- $\begin{bmatrix} -29 \\ -22 \\ 31 \end{bmatrix}$
- $\begin{bmatrix} 11 \\ 19 \\ 19 \end{bmatrix}$

- $\begin{bmatrix} 1 & 2 \\ -30 & 25 \\ 8 & 6 \end{bmatrix}$
- $\begin{bmatrix} 11 \\ 19 \end{bmatrix}$

Correct!

- (selected) Undefined

Correct

Question 2

10 / 10 pts

Given $A = \begin{bmatrix} -1 & 7 \\ 4 & 5 \end{bmatrix}$ and $\boldsymbol{u} = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$ calculate the matrix-vector product $A\boldsymbol{u}$

- $\begin{bmatrix} 6 \\ 7 \end{bmatrix}$

Correct!

- (selected) $\begin{bmatrix} 15 \\ 6 \end{bmatrix}$
- $\begin{bmatrix} 15 \\ 3 \end{bmatrix}$
- $\begin{bmatrix} 6 \\ 13 \end{bmatrix}$
- $\begin{bmatrix} 6 \\ 15 \end{bmatrix}$
- $\begin{bmatrix} -2 \\ 6 \end{bmatrix}$

Correct.

Question 3

10 / 10 pts

Given $\boldsymbol{u} = \begin{bmatrix} 2 \\ -2 \end{bmatrix}$ calculate the product $\boldsymbol{u}^T\boldsymbol{u}$ (where T is the transpose operator)

- Undefined
- 4
- 0

Correct!

- 8
- $\begin{bmatrix} 4 & -4 \\ -4 & 4 \end{bmatrix}$

Question 4

10 / 10 pts

Select all of the following MATLAB commands that will correctly evaluate the expression $\frac{u^2}{3} + v$

- (u*u/3 + v

Correct!

- (u^2/3) + v
- (u^2 + v)/3
- u*u+v/3

Correct!

- u^2/3 +v
- u^2 + v/3

Good.

Question 5

10 / 10 pts

Select all of the following MATLAB commands that will correctly evaluate the expression

$$\frac{v}{u^2+4}$$

- [ ] v/u^2+4
- [x] v/(u*u+4) — Correct!
- [ ] v/u*u+4
- [x] v/(u^2+4) — Correct!
- [ ] v/u^2+v/4
- [ ] v/(u*2+4)

Correct.

Question 6

10 / 10 pts

In MATLAB select **all** expressions that are equivalent to:

$$\frac{11}{5}+6$$

- [ ] 11/(5 + 6)

Correct! - [x] (11/5) + 6

Correct! - [x] 11/5 + 6

Correct! - [x] (11)/5 + 6

Correct! - [x] (11/5 + 6)

Correct

Question 7

10 / 10 pts

In MATLAB select the expression that is equivalent to:

$3^{(2^3)}$

Correct! - (•) 3^(2^3)

- ( ) (3^2)^3
- ( ) 3^2^3

Correct

Question 8

10 / 10 pts

In MATLAB select **all** expressions that produce a result equal to:

$$round\left(\frac{14}{5}\right) + 6$$

- [ ] floor(14/5) + 6

Correct!

- [x] round(13/5) + 6

Correct!

- [x] ceil(14/5) + 6

Correct

Question 9

10 / 10 pts

Consider the matrix below. What is the size of this matrix?

$$A = \begin{bmatrix} -1 & 9 & 6 & 4 \\ 8 & 2 & 7 & 5 \\ 10 & -2 & 9 & 4 \\ 5 & 1 & 5 & -3 \\ 8 & 4 & 10 & 2 \end{bmatrix}$$

Correct!

- (•) 5 by 4
- ( ) 16
- ( ) 4 by 4
- ( ) 4 by 5
- ( ) 20

Correct. You can verify this in MATLAB using size(A)

Question 10

10 / 10 pts

Consider the matrix below. Is it true that $A(2,4) = A(4,3)$?

$$A = \begin{bmatrix} -1 & 9 & 6 & 4 \\ 8 & 2 & 7 & 5 \\ 10 & -2 & 9 & 4 \\ 5 & 1 & 5 & -3 \\ 8 & 4 & 10 & 5 \end{bmatrix}$$

Correct!

- (●) True
- ( ) False

Correct. You can verify this in MATLAB using A(2,4) == A(4,3)

Question 11

10 / 10 pts

Consider the matrix below. Which of the following MATLAB expressions are equivalent to the MATLAB expression A(2,:) ?

$$A = \begin{bmatrix} -1 & 9 & 6 & 4 \\ 8 & 2 & 7 & 5 \\ 10 & -2 & 9 & 4 \\ 5 & 1 & 5 & -3 \\ 8 & 4 & 10 & 2 \end{bmatrix}$$

Correct!

- (●) [8, 2, 7, 5]
- ( ) [9; 2; -2; 1; 4]
- ( ) [8; 2; 7; 5]

[9 2 -2 1 4]

Error

Correct.

Question 12

10 / 10 pts

Consider the matrix below. Which of the following MATLAB expressions are equivalent to the MATLAB expression A([2,3],[4 4]) ?

$$A = \begin{bmatrix} -1 & 9 & 6 & 4 \\ 8 & 2 & 7 & 5 \\ 10 & -2 & 9 & 4 \\ 5 & 1 & 5 & -3 \\ 8 & 4 & 10 & 2 \end{bmatrix}$$

[7 -3]

Correct!

[5 5; 4 4]

Error

[7; -3]

[2 7; -2 9]

Correct.

Question 13

10 / 10 pts

Consider the matrix below. Which of the following MATLAB expressions are equivalent to the MATLAB expression A([1:2], [3: 4]) + A([1:2],[4:3]) ?

$$A = \begin{bmatrix} -1 & 9 & 6 & 4 \\ 8 & 2 & 7 & 5 \\ 10 & -2 & 9 & 4 \\ 5 & 1 & 5 & -3 \\ 8 & 4 & 10 & 2 \end{bmatrix}$$

- [ ] [12 8; 14 10]
- [ ] [10 10; 12 12]

Correct!

- [x] Error
- [ ] [11 11; 11 11]

Correct.

Question 14

10 / 10 pts

Select all of the following statement(s) that will produce the output: x=_ _ 4.00 ,where _ represents a blank space

Correct!

- [x] fprintf('x=%6.2f\n',4)

Correct!

- [x] fprintf('x=%6.2f\n',4.001)
- [ ] fprintf('x=%6.2e\n',4.001)

Correct!

- [x] fprintf('x=%6.2f\n',4.0);
- [ ] disp(4.00)
- [ ] fprintf('x=%6.2e\n',4);

Correct.

Question 15

10 / 10 pts

Select all of the following statement(s) that will produce the output

Pi is 3.141593

- [ ] fprintf('Pi is %e\n',pi)
- [x] fprintf('Pi is %8.6f\n',pi) Correct!
- [x] fprintf('Pi is %f\n',pi) Correct!
- [ ] disp('Pi is '); disp(pi);
- [ ] printf('Pi is %8.7f\n',pi)
- [ ] fprintf('Pi is %8.f\n',pi)

Correct.

Question 16

10 / 10 pts

Consider the matrix $A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$.

Which MATLAB expression will select the sub-matrix $\begin{bmatrix} e & d \\ b & a \end{bmatrix}$

Correct!

- [x] A([2,1],[2,1])
- [ ] A([1,2],[1,2])
- [ ] A([1:1:2],[2,1])
- [ ] A([1,2],[2,1])

Correct.

Question 17

10 / 10 pts

Consider the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$. Select **all** MATLAB expressions that would produce an equivalent result as the following Matlab expression:
A(2:3,2:3) – A(2:3,3:-1:2) + [2 0; 2 0]

Correct!

- [x] ones(size(A) - 1)

Correct!

- [x] [1 1; 1 1]
- [ ] [-1 1; -1 1]

Correct!

- [x] ones(2)
- [ ] [4 -2; 2 4]
- [ ] [-2 -2; 4 4]
- [ ] [-1 -3; 5 3]

Correct.

Quiz score: **170** out of 170