1. Let $A=\left[\begin{matrix}2&3&π\\8&^{π}/\_{2}&1\end{matrix}\right]$ find $cos⁡(A)$, then round the result to the nearest integer toward $-\infty $
2. Let $B=\left[\begin{matrix}6&2&5\\3&9&17\end{matrix}\right] $calculate the **square root**, natural logarithm $e^{x}$and factorial of each element of the matrix $B$
3. By using **colon** enter the matrix

$$C=\left[\begin{matrix}16&\begin{matrix}12&8&4\end{matrix}\\0&\begin{matrix}1&  2&  3\end{matrix}\\-3&\begin{matrix}0&  3&  6\end{matrix}\end{matrix}\right] ,  D=\left[\begin{matrix}4&\begin{matrix}1&-2&-5\end{matrix}\\-1&\begin{matrix}0.5&2&3.5\end{matrix}\end{matrix}\right]$$

1. Let $C=\left[\begin{matrix}16&\begin{matrix}12&8&4\end{matrix}\\0&\begin{matrix}1&  2&  3\end{matrix}\\-3&\begin{matrix}0&  3&  6\end{matrix}\end{matrix}\right]$ show that
2. The elements in **second column**
3. The elements in **third row**
4. The **rows 2** to **3** and **column 1** to **3**
5. Let $A=\left[\begin{matrix}2&7\\3&1\\8&1\end{matrix}    \begin{matrix}9&-2\\5&6\\2&5\end{matrix}\right]$ explain the perform the following commands
* Remove the **second** column of $A$
* Add a row of all **1's** at the beginning
* Swap the **2nd** column and the **last** column
* Create a **diagonal** of $A$
1. Let A = [1:4; 5:8; 1 1 1 1]. Predict and check the result of:

x = A(:, 3)

B = A(1 : 3, 2 : 2)

A(1, 1) = 9 + A(2, 3)

A(2 : 3, 1 : 3) = [0 0 0; 0 0 0]

A(2 : 3, 1 : 2) = [1 1; 3 3]

y = A(3 : 3, 1 : 4)

A = [A; 2 1 7 7; 7 7 4 5]

C = A([1, 3], 2)

D = A([2, 3, 5], [1, 3, 4])

D(2, :) = [ ]

1. Let **A = [4 5 9 6]**.
* Subtract **3** from each element.
* Add **11** to the **odd**-index elements.
* Compute the **square root** of each element.
* Raise to the **power 3** each element.
1. Consider the matrix $A=\left[\begin{matrix}4&5&-7\\2&6&1\\0&3&-2\end{matrix}\right]$find the determinant and inverse of matrix.
2. Write a program to input any square matrix $A$ and to find and print its determinant and inverse if exist.
3. Write a program to calculate the area of a rectangle.
4. Write a program to input three marks of a student and to calculate his/her average.
5. Write a program that calculate the $x$ and $y$ coordinates of the point whose polar coordinates are $r$ and $θ$
6. Write a **program** to calculate the value of the expression

$z=e^{-a} \sin(\left(x\right))+10\sqrt{y} $ for $a = 5$, $x = 2$, and $y = 8$.

1. Write a **program** to **input** two integer number $x$ and $y$ and to find and **print** the addition, subtraction, multiplication, division and reminder of them.
2. Write a program to input your mark in one subject and to test it whether you are passed or not?
3. Write a program to input the value of $x$ and to find and print the value of y such that $y=\frac{3x^{2}+2}{x-3}$
4. Suppose the standard time for study is 3 hours, Write a program that determine the hours that a student practice is enough or not.
5. Write a program to find the greatest number between three integer numbers $x$, $y$ and $z$.
6. Write a program that accepts a number as a temperature, **if** the number that is entered is degree **Fahrenheit** the program must be **convert** the number to the equivalent degrees **Celsius** (and vice versa) finally print a suitable message for each case.

$$Celsius= \frac{5}{9}(degree Fahrenheit - 32)$$

$$Fahrenheit= \frac{9}{5}(degree Celsius + 32)$$

1. Write a program to calculate the value of $y$ such that
2. $y=\left\{\begin{matrix}x-1,    x<0 \\  x^{2},        x\geq 0\end{matrix}\right.$
3. Write a program to input two integer numbers $n$ and $d$, and to test whether $n$ is divisible by $d$ or not.
4. Write a program to find the **area** of the **circle**.
5. Write a program to input a number and prints out a message to say if it **negative** or **non-negative**.
6. Write a program to input the marks of two students and to find the **average** of each of them.
7. Give **MATLAB** code to calculate $y$ where $y = -1$ when $x < 0$ and $y = 2 $when $x > 2$.
8. The value of $f(x)$ is $-2x $when $x < 0$; $x(x-2) $when $x$ is in $[0, 2] $and $ln⁡(x-1) $otherwise. Calculate $f(x)$.
9. Write a program to input a number and determine whether it is **non-positive** or **even** or **odd**.
10. Write a program to determine going to the theater with respect to the amount of dollar. **If** you have **5** dollars go to the dollar theater, **if** you have **10** dollars go to the regular theater, **if** you have **100** dollars, go to a Broadway play, **else** **if** you have **1,000,000** dollars, buy a theater.
11. Write a program to calculate the value of $k$ such that

$$k=\left\{\begin{matrix}a+1,&a>20\\\frac{a}{2},&10>a\geq 20\end{matrix}\right.$$

1. Write a **MATLAB** if statement to calculate $y$ where $y = 1 $if $x > pi/2$, $y = sin⁡(x) $if $x$ is in $[0, pi/2]$ and $y = 0 $otherwise.
2. Write a program to calculate the value of $r$ such that

$$r\left(x\right)=\left\{\begin{matrix}x^{2},&0<x<5\\12x,&5<x<10\\0,&otherwise\end{matrix}\right.$$

1. Write a program to input any integer number $x$ and to find the value of $y$ such that.
2. Using switch case statement write a program to input the degree (mark) of a student in one subject and to print his/her grade.
3. Write a program that accept the name of the **month** and print the number of **days** of it. (we now that the number of days in a particular month are as below **Sep**, **Apr**, **Jun**, **Nov**: **30** days and all other's have **31** days except **Feb** alone which has **28** days on **Clear** and **29** days on **Leap** year)
4. Write a program to input a number as **length** of any thing (with any unit of length) and to **convert** it according to the certain unit such that meter.

1 inch=2.54 cm=0.0254 m

1 foot= 30.48 cm=0.3048 m

1 yard= 91.44 cm=0.9144 m

1 mile=1609 cm=16.09 m

1 centimeter=0.01 m

1. Write a program to input a natural number from1 to 12 and to print the name of month corresponding to this number after inputting it directly
2. Write a program to write the units of each of the following cases.
3. Write a program to find the **square** of numbers from 1 to 4 in steps of 0.5.
4. Write a program to find the **root** of numbers 25,9, 81.
5. Write a program to find the **summation** of **even** numbers from 1 to 100.
6. Write a program to find and print the **factorial** of a natural number $n$.
7. Write a program to input $n$ **random** natural number and to find the **average** of them.
8. Write a program to find and print the value of $A$ such that $A=1+\frac{1}{2}+\frac{1}{3}+….+\frac{1}{n}$
9. Write a program to input the value of $x$ and $y$ to find the value of $W$ such that



1. Write a program to input the value of $x$ and $y$ to find the value of $W$ such that



1. write a program to input the marks of $n$ students and to find and print the **average** and the number of marks of each student.
2. Write a program to input the marks of $n$ male and female students and to calculate and print their **average** separately according to their sex.
3. Write a program to **input** the marks of **n** students (in **m** subjects) and to find and print their **averages** according to the **units** of the subjects.
4. Write a program to input the marks of a student (in **m** subjects) if she/he **passed** in the all the subjects you must find his/her **average**, and if he/she **failed** in one or some subjects , then you must print the number of these subjects.
5. In an 3\*4 matrix **A** and **interchanged** it to 2\*6 matrix **B**.
6. Write a program to **input** any **matrix** **A** and to find and print the **max** and **min** number in the matrix.
7. Write a program to **input** the **square matrix A** and then **swap** the element of the **main diagonal** with the elements of **row 3**.
8. Write a program to **input** the **square matrix A** and then **swap** the element of the **main diagonal** with the elements of the **secondary diagonal**.
9. Write a program to find the **summation** of the numbers that is **divided** by **5** [from **1** to **80**].
10. Write a program to find the **summation** of **odd** numbers and the number of **even** numbers from 0 to n.
11. Write a program to input **n** **random** natural numbers and to find and print the **factorial** of each of them.(**without** using the factorial function and use the while loop)
12. Write a program to input **n random** natural numbers and to print only the **multiplicative** of number 4 and their average if exist(**using while loop**).
13. Write a program to **input** two real numbers and to find and print the **summation** of them(define the sum by a **function**)
14. Write a program to **input** three degrees of a student and to find his/her **averages** (using **function**) and to indicate if he/she is passed or not?
15. Write a program to input n random real numbers x and to find the value of $y=3x^{2}-4x$corresponding to each value of $x$ (define the value of $y $as a function).
16. Using **function** write a program to **input** the **square matrix** $A$ and find and print the **multiplication** of diagonal elements.
17. Using **function** write a program to find the number of **digits** of any natural number that is entered by the user.