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1802038

Question-1 : Integral

```
def f(x):  
    return (2.178**(x**2))  
a=int(input("Enter Lower Limit: "))  
b=int(input("Enter Upper limit: "))  
n=int(input("Enter Number Of intervals: "))  
width=(b-a)/n  
i=0  
Area=0  
while(i<=n+1):  
    Area=(f(a+(width*i))*width)+Area  
    i=i+1  
print(Area)
```

Question-2:

Addition of 2 matrices:

```
# first Matrix  
a = [[3,6,3],  
     [3 ,7,4],  
     [2 ,4,6]]  
  
# second Matrix  
b = [[9,3,7],  
     [2,5,4],  
     [3,2,6]]  
  
result = [[0,0,0],  
          [0,0,0],  
          [0,0,0]]
```

```

# iterate through rows
for i in range(len(a)):
    # iterate through columns
    for j in range(len(a)):
        result[i][j] = a[i][j] + b[i][j]

# printing result
for r in result:
    print(r)

```

Subtraction:

```

# first Matrix
a = [[3,6,3],
     [3 ,7,4],
     [2 ,4,6]]

# second Matrix
b = [[9,3,7],
     [2,5,4],
     [3,2,6]]

result = [[0,0,0],
          [0,0,0],
          [0,0,0]]

# iterate through rows
for i in range(len(a)):
    # iterate through columns
    for j in range(len(a)):
        result[i][j] = a[i][j] - b[i][j]

# printing result
for r in result:
    print(r)

```

Multiply 2 matrices:

```

a = [[2, 5, 7],
     [4, 5, 6],
     [2, 3, 5]]

```

```

# take a 3x4 matrix
b = [[3, 2, 4],
      [3, 3, 9],
      [4, 4, 2]]

result = [[0, 0, 0],
          [0, 0, 0],
          [0, 0, 0]]

# iterating by row of A
for i in range(len(a)):

    # iterating by coloum by B
    for j in range(len(b[0])):

        # iterating by rows of B
        for k in range(len(b)):
            result[i][j] += a[i][k] * b[k][j]

for r in result:
    print(r)

```

Question-3:

Diagonal

```

a = [[3,6,3],
      [3 ,7,4],
      [2 ,4,6]]

for i in range(len(a)):
    print(a[i][i])

```

Trace

```

a = [[3,6,3],
      [3 ,7,4],
      [2 ,4,6]]

trace = 0

for i in range(len(a)):

```

```
    trace += a[i][i]

print(trace)
```

Transpose:

```
a = [[12,7],
     [4 ,5],
     [3 ,8]]

rows, cols = (len(a[0]),len(a) )
result = [[0]*cols]*rows
print(result)

for i in range(len(a)):
    # iterate through columns
    for j in range(len(a[0])):
        result[j][i] = a[i][j]

print(result)
```