Assignment
Matrices

Problem 1: Is it a valid matrix?

Write a function that determines if the given list of lists is valid, meaning that for each row, it has the same number of columns.

```
def is_valid_matrix(matrix):
    # your code here
    return
```

Here is what the output should look like:

```
> is_valid_matrix([[1,2,3],[4,5,6],[7,8,9]])
True
> is_valid_matrix([[1,2,3],[4,5],[7,8,9]])
False # because the second row only has two values, while the other ones have three
```

Problem 2: Matrix multiplication

Write a function that multiplies two matrices together. For matrix multiplication, the number of columns in the first matrix must be equal to the number of rows in the second matrix. The result matrix, known as the matrix product, has the number of rows of the first and the number of columns of the second matrix.

There is a formal definition of matrix multiplication on wikipedia:
https://en.wikipedia.org/wiki/Matrix_multiplication

Output `None` if the matrices cannot be multiplied together. Use the previous function `is_valid_matrix` to validate the two matrices before you multiply them.

Your function should have the following signature:

```
def matrix_multiply(m, n): # m is the first matrix and n is the second matrix
    # your code here
    return
```

Here is what the output should look like:

```
matrix1 = [[1,2,3],
           [4,5,6]]

matrix2 = [[1,2],
           [3,4],
           [5,6]]

> matrix_multiply(matrix1, matrix2)
[[22,28],[49,64]]
> matrix_multiply(matrix2, [[]])
None
> matrix_multiply(matrix2, matrix2)
None
```