Review 8-3

1. We can multiply two matrices A and B only if they are compatible. Explain the meaning of **compatible**.

A.col = B.row

2. What is the dimension of the matrix product AB if A is a $p \times q$ matrix and B is a $q \times r$ matrix?

p × r

3. Count the number of scalar multiplications to multiply A and B where A is a $p \times q$ matrix and B is a $q \times r$ matrix.

pr × qr = p qr

4. Count the number of scalar multiplications where the dimensions of A_1, A_2 and A_3 are 10×100, 100×5, and 5×50, respectively.

(1) $(A_1A_2)A_3$

5000 + 2500 = 7500

(2) $A_1(A_2A_3)$

25000 + 50000 = 75000

5. Fully parenthesize the product $A_1A_2A_3A_4$. (There are five distinct ways.)

1 ((2 3) 4)

1 (2 (3 4))

((1 2) 3) 4

(1 (2 3)) 4

(1 2) (3 4))