

## Homework # 9

Prove  $A(B+C) = AB + AC$  (matrices)

$$\begin{aligned} [A(B+C)]_{ij} &= \sum_k a_{ik} (b_{kj} + c_{kj}) \\ &= \sum_k a_{ik} b_{kj} + \sum_k a_{ik} c_{kj} \\ &= (AB)_{ij} + (AC)_{ij} \end{aligned}$$

So  $A(B+C) = AB + AC$