

Strang  
Exercise 27, Page 69

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Consider.

$$\begin{aligned} AB &= \begin{bmatrix} \times & \times & \times \\ 0 & \times & \times \\ 0 & 0 & \times \end{bmatrix} \begin{bmatrix} \times & \times & \times \\ 0 & \times & \times \\ 0 & 0 & \times \end{bmatrix} \\ &= [A_1 \quad A_2 \quad A_3] \begin{bmatrix} B_1 \\ B_2 \\ B_3 \end{bmatrix} \\ &= A_1 B_1 + A_2 B_2 + A_3 B_3 \\ &= \begin{bmatrix} \times \\ 0 \\ 0 \end{bmatrix} [\times \quad \times \quad \times] + \begin{bmatrix} \times \\ \times \\ 0 \end{bmatrix} [0 \quad \times \quad \times] + \begin{bmatrix} \times \\ \times \\ \times \end{bmatrix} [0 \quad 0 \quad \times] \\ &= \begin{bmatrix} \times & \times & \times \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} + \begin{bmatrix} 0 & \times & \times \\ 0 & \times & \times \\ 0 & 0 & 0 \end{bmatrix} + \begin{bmatrix} 0 & 0 & \times \\ 0 & 0 & \times \\ 0 & 0 & \times \end{bmatrix} \\ &= \begin{bmatrix} \times & \times & \times \\ 0 & \times & \times \\ 0 & 0 & \times \end{bmatrix} \end{aligned}$$