

**Solution** (#581) For  $1 \leq i, j \leq k$  we have

$$[MN]_{ij} = \sum_{i=1}^k [A]_{ik} [E]_{kj} + \sum_{i=1}^k [B]_{ik} [G]_{kj} = [AE]_{ij} + [BG]_{ij} = [AE + BG]_{ij},$$

and can find similar expressions for  $[MN]_{(i+k)j}$ ,  $[MN]_{i(j+k)}$ ,  $[MN]_{(i+k)(j+k)}$ .