

Self Assessment Quiz 3
Section 1.3

1. Let $A = \begin{bmatrix} -2 & 3 & 0 \\ -2 & 2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 1 & 3 \\ 1 & 1 & 1 \end{bmatrix}$, and $C = \begin{bmatrix} -2 & -2 \\ -1 & -1 \end{bmatrix}$. Find $AB^t + C$.

2. Let $A = \begin{bmatrix} 1 & -2 \\ 2 & 3 \end{bmatrix}$.

(a) Find a matrix B such that $AB = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$.

(b) Write the matrix B found in part (a) as kC for some scalar k and 2×2 matrix C . What is the connection between the scalar k and the entries of A ?

3. Answer each part True or False.

(a) If A and B are symmetric matrices, then A and B commute.

(b) If A and B commute, then $A^n B = B A^n$ for all natural numbers $n \geq 1$.

(c) If A is a 2×2 matrix with $AA^t = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, then A is the zero matrix.