

Matrices : General - Exercises (1 page ; 3/6/26)

(1) Find k such that $\begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix}$ and $\begin{pmatrix} 5 & 9 \\ 6 & k \end{pmatrix}$ commute.

(2) Suppose that the following pair of equations enables (x', t') to be determined from (x, t) :

$$x' = \gamma(x - vt) \text{ \& } t' = \gamma(t - \frac{xv}{c^2}) \quad (\text{A})$$

and that it is also true that

$$x = \gamma(x' + vt') \text{ \& } t = \gamma(t' + \frac{x'v}{c^2}) \quad (\text{B})$$

(3) Find the condition(s) for two 2×2 matrices to commute.