Mark each statement True or False. Justify each answer.

(a) The change-of-basis matrices satisfy $P_{C \leftarrow B} \cdot P_{B \leftarrow C} = I_n$.

(b) The columns of $P_{C \leftarrow B}$ are linearly dependent.

(c) A is diagonalizable if $A = PDP^{-1}$ for some matrix D and some invertible matrix P.

(d) If $\mathbb{R}^n$ has a basis of eigenvectors of A, then A is diagonalizable.

(e) A is diagonalizable if and only if A has n eigenvalues, counting multiplicities.

(f) If A is diagonalizable, then A is invertible.

(g) A is diagonalizable if A has n eigenvectors.

(h) If A is diagonalizable, then A has n distinct eigenvalues.

(i) If $AP = PD$, with D diagonal, then the nonzero columns of P must be eigenvectors of A.

(j) If A is invertible, then A is diagonalizable.