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1.(a)A **linear transformation**, T:U→V T : U → V , is a function that carries elements of the vector space U (called the domain) to the vector space V (called the codomain), and which has two additional properties. T(u1+u2)=T(u1)+T(u2) T ( u 1 + u 2 ) = T ( u 1 ) + T ( u 2 ) for all u1,u2∈U.

(b) The **rank of a matrix** is **defined** as (a) the maximum number of linearly independent column vectors in the **matrix** or (b) the maximum number of linearly independent row vectors in the **matrix**. Both definitions are equivalent. For an r x c **matrix**, ... If r is greater than c, then the maximum **rank** of the **matrix** is c.