The Answer of Assignment 2

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Problem 1 Solution

(1) 根据线性空间的同构理论，任何维数相同的线性空间都是同构的。因此可知 $\sum_{i,j=0}^{1} c_{ij} |i,j\rangle$ 与 $\{(x_1, x_2, x_3, x_4)\}, x \in C$ 同构。即 $v_1 = (c_{00}, c_{01}, c_{02}, c_{03})^*$,$v_2 = (d_{00}, d_{01}, d_{10}, d_{11})^*$

(2) $\langle\psi_1|\psi_2\rangle = v_1^\dagger v_2$ 成立, 这是因为

(3)

(4)

Problem 2 Solution

(1)

(2)

(3)

(4)

Problem 3 Solution

(1)

(2)

(3)

(4)