

**THE CHINESE UNIVERSITY OF HONG KONG**  
**Department of Mathematics**  
**MATH4010 Functional Analysis 2021-22 Term 1**  
Homework 6  
Deadline: 2021-11-29 Monday

Notice:

- All the assignments must be submitted before the deadline.
- Each assignment should include your name and student ID number.

1. Prove that in a complex (resp. real) inner product space,  $x \perp y$  if and only if

$$\|x + \lambda y\| = \|x - \lambda y\|$$

for all scalars  $\lambda \in \mathbb{C}$  (resp.  $\mathbb{R}$ ).

— *THE END* —