AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES – AIMS

finance: Assignment number

Tlou Kubjana
tlou@aims.ac.za

July 2, 2014

1 ADJOINT OPERATORS – SHEET ONE, QUESTION 4

Consider a finite-dimensional vector space V equipped with an inner product $(\cdot,\cdot)$. Suppose A and B are operators in V. Show the following identities

(a) $(A^\dagger)^\dagger = A$.

(b) $(AB)^\dagger = B^\dagger A^\dagger$.

(c) If A and B are both Hermitian operators then the commutator $C = [A,B]$ is anti-Hermitian i.e. $C^\dagger = -C$.

1.1 SOLUTION – ADJOINT OPERATORS: SHEET ONE, QUESTION 4

Write your solution here

2 PROJECTION OPERATORS – SHEET ONE, QUESTION 5

Type the question here

2.1 SOLUTION – PROJECTION OPERATORS: SHEET ONE, QUESTION 5

Write your solution here

3 Measurements and expectation values – Sheet two, Question 1

Type the question here

3.1 Solution – Projection operators: Sheet two, Question 1

Write your solution here

4 Subspaces of a vector space – Sheet two, Question 3

Type the question here

4.1 Solution – Subspaces of a vector space: Sheet two, Question 3

Write your solution here