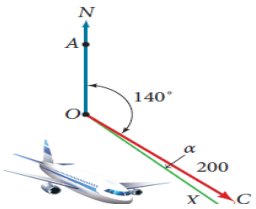
Week 8
Term 1
2024

HAWKER COLLEGE
Engage | Inspire | Achieve

Learning Brief
SM3

1. Goals



By the end of this unit, students will:

- understand the concepts and techniques in vectors, complex numbers, functions and graph sketching
- apply reasoning skills and solve problems in vectors, complex numbers, functions and graph sketching
- communicate their arguments and strategies when solving problems
- construct proofs of results
- interpret mathematical information and ascertain the reasonableness of their solutions to problems.

This week:

Vectors in three dimensions

The algebra of vectors in three dimensions:

- review the concepts of vectors from Unit 1 and extend to three dimensions including introducing the unit vectors i, j and k.
- prove geometric results in the plane and construct simple proofs in three-dimensions.

2. Theoretical Components

Notes and examples are in Google Classroom – check the WK10 folder.

Vectors in 3D: https://goo.gl/eWD1E

https://goo.gl/HDl3yr

3D Cartesian Coordinate System:

- https://goo.gl/QjSnxr

Position Vectors (3D):

- https://goo.gl/a0rp9j

Scalar Product (3D):

- https://goo.gl/dIbb7S

Distance between 2 points (3D):

- https://goo.gl/b3cQej

Geometric Proofs:

- https://goo.gl/waQKvb

Knowledge Checklist:

- x What are vectors?
- x How do you notate them?
- x Addition of vectors
- x Multiplication by scalars
- x Equality of Vectors
- x Zero Vectors
- x Unit Vectors
- x Scalar Product

3. Practical Components

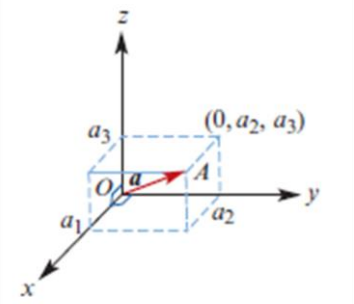
To review your work on Vectors:
Attempt a few questions

- Camb Ex 5A
- Vectors in Geometry (odd numbered questions, 8E)
- Ex3C Vectors in 3D (even numbered)

4. Investigation

No investigation this week!

Prepare well for the Problem-Solving Task, 20%.



5.QFO

Quiz/Forum/Other

Vectors in aviation:

https://www.youtube.com/watch?v=7tWOyOu-QG4