

# MTH 1020 Week 11 tutorial

- 1 Work through a problem from last week
- 2 Integration

## Week 10, Q11

### Question

A water tank has the shape of an inverted circular cone with base radius 2 m and height 4 m. If water is being pumped into the tank at a rate of  $2 \text{ m}^3/\text{min}$ , find the rate at which the water level is rising when the water is 3 m deep.

# Key concepts so far (integration)

- 1 Definite integral as a Riemann sum. Indefinite integral as anti-differentiation.
- 2 Fundamental theorem of calculus.
- 3 Area calculation.
- 4 Techniques of integration:
  - 1 Substitution (chain rule)
  - 2 By parts (product rule)
  - 3 By partial fractions
  - 4 By trig identities

# MTH 1020 Week 11 tutorial

- 1 Get into groups of 3-4 people who all prepared a different question in advance.
- 2 Write your **preferred name** and **ID number** on the whiteboards so I can take attendance
- 3 Present your prepared question to each other as I come around, you should only take about 5min each for this.
- 4 Then get started on the other questions **in your groups**.
- 5 **At the end:** please erase the boards and return any markers etc that you used (you do not need to return the handouts)