Integration

- **Why?**
  - find area under curve
  - recover f (x) from f ' (x)
- **Before integrating**
  - Expand brackets
  - Changing Roots to Powers
  - x is not a denominator
- **Rules**
  - $\int ax^n dx = \frac{ax^{n+1}}{n+1}$
  - increase power by one
  - then divide by new power
  - no limits
    - remember + c
  - MEMORY AID
    - Integration, Increase Power
    - Both start with the same letter
- **Practical Applications**
  - Integrate acceleration
    - Speed
  - Integrate speed
    - Distance
- **Area between two curves**
  - $\int$(Curve above - Curve below) dx
  - Points of intersection
    - make curves equal and solve (y=y)
  - Also applies for line and a curve
- **Areas and the x -axis**
  - Below x-axis
    - Negative answer
      - Change to a positive
  - Above and below x-axis
    - Work out separately
    - then add