

Objective

1 Key knowledge and worked examples

Points A(-1,2) and B(5,10) have $\Delta x=6$, $\Delta y=8$. Distance $d=\sqrt{6^2+8^2}=10$ and midpoint $M=((-1+5)/2, (2+10)/2)=(2,6)$. For a arc of radius 6, a 60° sector is $1/6$ of a full circle: area $= (60/360)\pi 6^2 = 6\pi$; arc length $= (60/360)2\pi 6 = 2\pi$. Enlarging every length by 3 multiplies area by 9 and volume by 27, not 3.

2 Practice

2.1 Points A=(-1,2) and B=(5,10) are given. Find their distance and midpoint. A right circular cylinder has radius 3 cm and height 4 cm. Find its volume and total surface area, including both ends.

3 Exam-style questions

3.1 A rectangle has diagonal 10 cm and one side 6 cm. A similar rectangle has area nine times as large. Find its perimeter. Explain which labelled facts permit Pythagoras, and whether the same calculation would hold for an arbitrary quadrilateral.
