

Course 2E1 2004-05 (SF Engineers & MSISS & MEMS)**S h e e t 9**

Due: in the tutorial sessions next Wednesday/Thursday

Exercise 1

Find the volume of the solid S :

- (i) S is the pyramid with vertices $(0, 0, 0)$, $(0, 1, 0)$, $(2, 0, 0)$, $(0, 0, 3)$;
- (ii) S is given by $x \geq 0$, $1 \leq y \leq 2$, $z \geq 0$, $z \leq 4 - x^2$;
- (iii) S is given by $x \geq 0$, $y \geq 0$, $x + y \leq 1$, $0 \leq z \leq x^2 + y^2$.

Exercise 2

Find area and center of mass (assuming constant density $\delta = 1$) of the bounded region R :

- (i) R is given by $2 \leq x \leq 4$, $3 \leq y \leq 7$;
- (ii) R is given by $x \geq 0$, $y \geq 0$, $2x + y \leq 2$;
- (iii) R is given by $y \geq 0$, $y \leq 1 - x^2$.