

## Subject 26

Please, don't write on the exam paper.

### Question 1

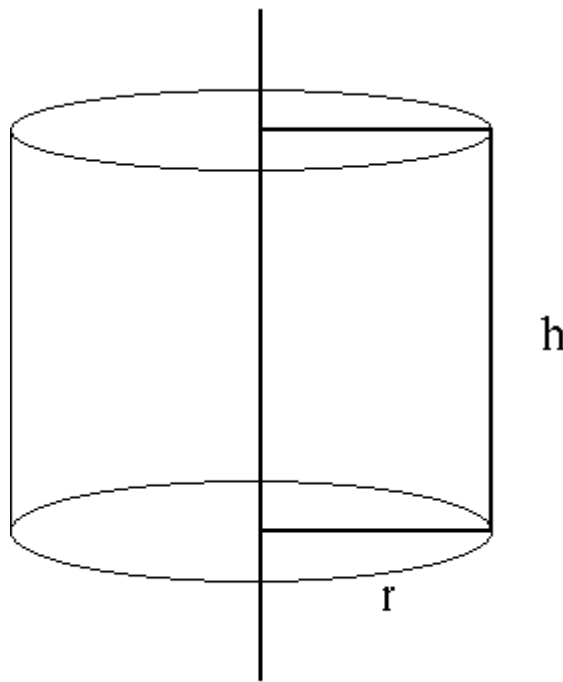
You complain that the *hot tub* in your hotel suite is not hot enough. The hotel tells you that they will increase the temperature by 5% each hour. If the current temperature of the hot tub is  $22^{\circ}\text{C}$ , what will be the temperature of the hot tub after 4 hours, to the nearest tenth of a degree?

Nota :

*hot tub* : jacuzzi

### Question 2

Consider a rectangle of perimeter 12 cm. Form a cylinder by revolving this rectangle about one of its edges.



- 1) Express the volume  $V$  of the cylinder in terms of  $r$ .
- 2) Find the length  $r$  which maximizes the volume.
- 3) Deduce the corresponding dimensions of the rectangle.

