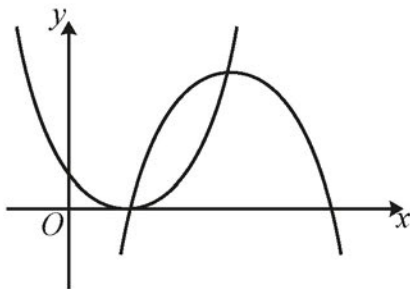


**3**

**(a) In this question you must show detailed reasoning.**

Find the coordinates of the points of intersection of the curves with equations  $y = x^2 - 2x + 1$  and  $y = -x^2 + 6x - 5$ . **[4]**

- (b)** The diagram shows the curves  $y = x^2 - 2x + 1$  and  $y = -x^2 + 6x - 5$ . This diagram is repeated in the Printed Answer Booklet.



On the diagram in the Printed Answer Booklet, draw the line  $y = 2x - 2$ . **[2]**

- (c)** Show on your diagram in the Printed Answer Booklet the region of the  $x$ - $y$  plane within which all three of the following inequalities are satisfied.

$$y \geq x^2 - 2x + 1$$

$$y \leq -x^2 + 6x - 5$$

$$y \leq 2x - 2$$

You should indicate the region for which all the inequalities hold by labelling the region  $R$ . **[1]**