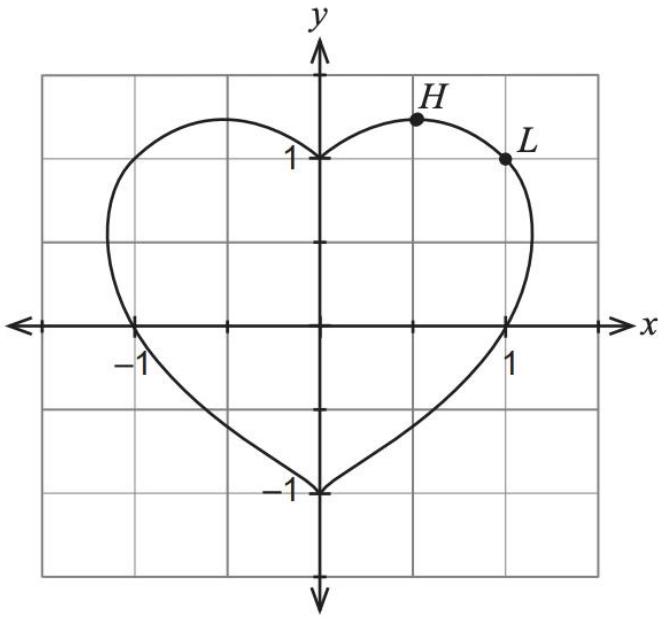
Question 20 **(8 marks)**

The graph of $(x^2 + y^2 - 1)^3 = x^2y^3$ is shown below.



(a) By implicitly differentiating the given equation, obtain an equation relating x, y and $\frac{dy}{dx}$

(3 marks)

(Note: Do **not** attempt to obtain $\frac{dy}{dx}$ as the subject of this equation.)

(b) Determine the exact slope of the tangent to the curve at the point $L\,(1,1)$. (2 marks)

At point H on the graph the curve is horizontal.

(c) Determine the coordinates of point H, correct to 0.001. (3 marks)