**2E Tangents & Normals**

1. The point , where , lies on the rectangular hyperbola with equation . Find:
2. The equation of the tangent .
3. The equation of the normal to at the point , giving your answer in the form .
4. The distinct points A and B, where lie on the parabola C with equation .
5. The line is the tangent to C at A and the line is the tangent to C at B.

Given that at A, , find the coordinates of A and B.

1. Draw a sketch showing the parabola C. Indicate A, B, and .
2. Find equations for and , giving your answer in the form .
3. The point with coordinates lies on the parabola with equation .

Find the equation of the tangent to at , giving your answer in the form

1. The point lies on the parabola with equation . Find:
2. The value of
3. An equation of the normal to at

The normal to at cuts the parabola again at the point . Find:

1. The coordinates of
2. The length , giving your answer as a simplified surd