

Consider the circle in the  $(x, y)$ -plane whose centre is  $(2, 1)$  and which is tangent to the  $x$ -axis.

- 1 What is the radius of this circle?

To be tangent to the  $x$ -axis, the circle must touch that axis directly above or below its centre. Therefore, the radius is the distance between  $(2, 1)$  and  $(2, 0)$ , which is

$$1.$$

- 2 What is the equation of this circle in standard form?

Since the centre is  $(2, 1)$ , the radius is 1, and  $1^2 = 1$ , the standard-form equation of the circle is

$$(x - 2)^2 + (y - 1)^2 = 1.$$