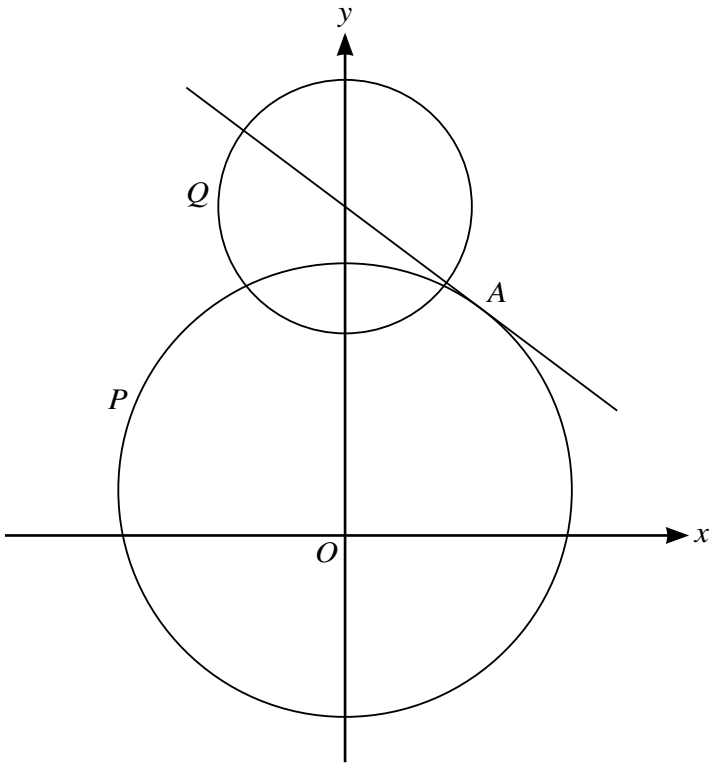
12



The diagram shows a circle P with centre (0, 2) and radius 10 and the tangent to the circle at the point A with coordinates (6, 10). It also shows a second circle Q with centre at the point where this tangent meets the y-axis and with radius $\frac{5}{2}\sqrt{5}$.

(a) Write down the equation of circle P. [1]

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(b) Find the equation of the tangent to the circle P at A. [2]

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(c) Find the equation of circle Q and hence verify that the y-coordinates of both of the points of intersection of the two circles are 11. [3]

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(d) Find the coordinates of the points of intersection of the tangent and circle Q, giving the answers in surd form. [3]

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