QT Equation of the Tangent to a Circle

1. The diagram shows a circle $x^2 + y^2 = 8$
 A tangent line is drawn at point P (2,2).
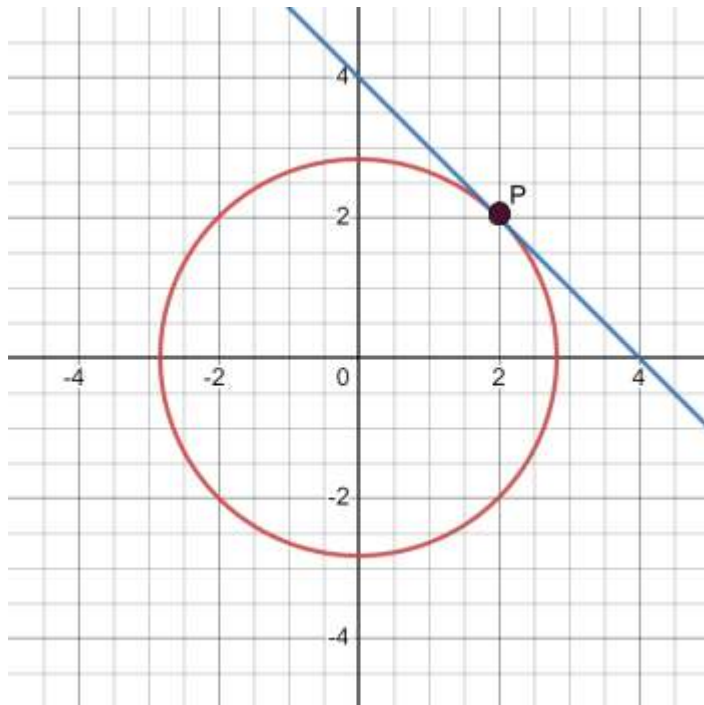(a) Find the gradient of the line OP   (1 mark)
(b) Find the gradient of the tangent   (2 marks)
(c) Find the equation of the tangent   (2 marks)

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2. The diagram shows a circle x^2 + y^2 =24.
 A tangent line is drawn at point Q (-5,-3).
(a) Find the gradient of the line OQ   (1 mark)
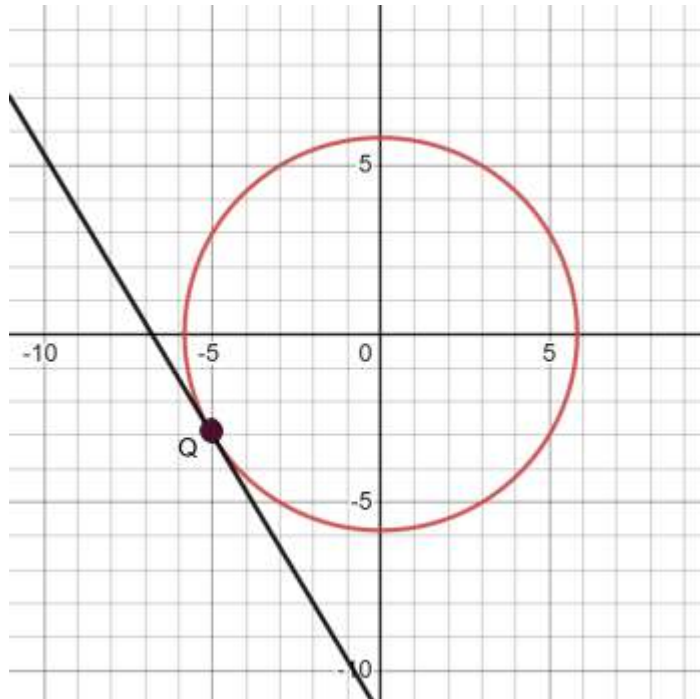(b) Find the gradient of the tangent   (2 marks)
(c) Find the equation of the tangent   (2 marks)

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3. A circle has a centre at (3,6).
The point T (9,12) lies on the circumference of the circle.
Find the equation of the tangent to the circle at point T.

(5 marks)

4. A circle has the equation $x^2 + y^2 = 20$
(a) Write down the centre of the circle   (1 mark)
(b) Write down the exact length of the radius of the circle   (1 mark)
(c) The point S (2,4) lies on the circumference of the circle.
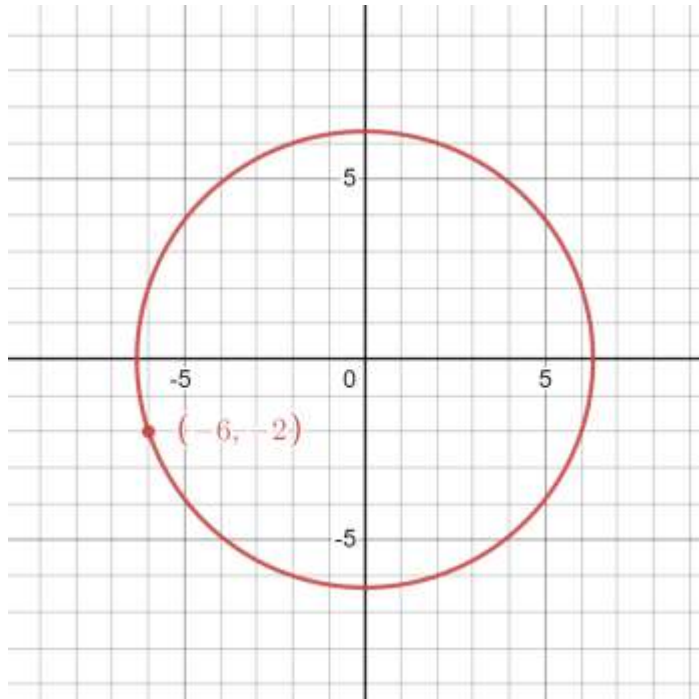Find the equation of the tangent to the circle at point S   (4 marks)

QT Equation of the Tangent to a Circle

5. The diagram shows a circle of radius $\sqrt{40}$ cm, centre (0,0)
Find the equation of the tangent to the circle at the point (-6,-2)   (5 marks)

6. The diagram shows a circle $x^2 + y^2 = 20$
 A point P lies on the circumference and has an x coordinate of 2.
The tangent at P intersects the x-axis at point Q
Work out the coordinates of point Q   (6 marks)