

Level 3 Algebra - Graphs - Circles

June 2013 - Question 18

Jan 2014 - Question 18

June 2015 - Question 2

Jan 2016 - Question 10

June 2016 - Question 1

Jan 2017 - Question 9

June 2017 - Question 4

Jan 2018 - Question 6

June 2018 - Question 2

Jan 2020 - Question 6

Jan 2022 - Question 2

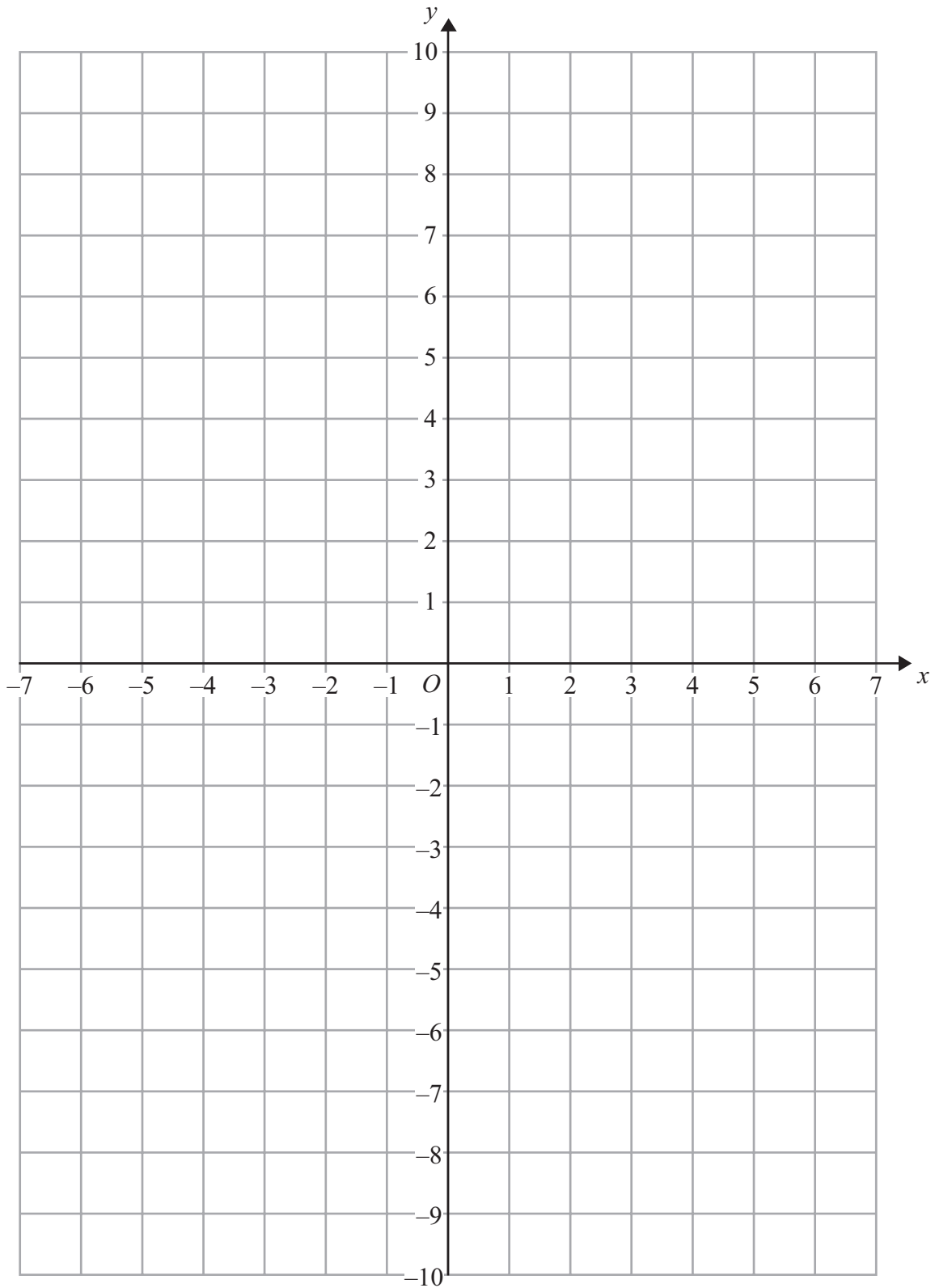
June 2022 - Question 5

Jan 2023 - Question 4

June 2023 - Question 5

Jan 2024 - Question 5

18 (a) On the grid, construct the graph of $x^2 + y^2 = 25$



(2)



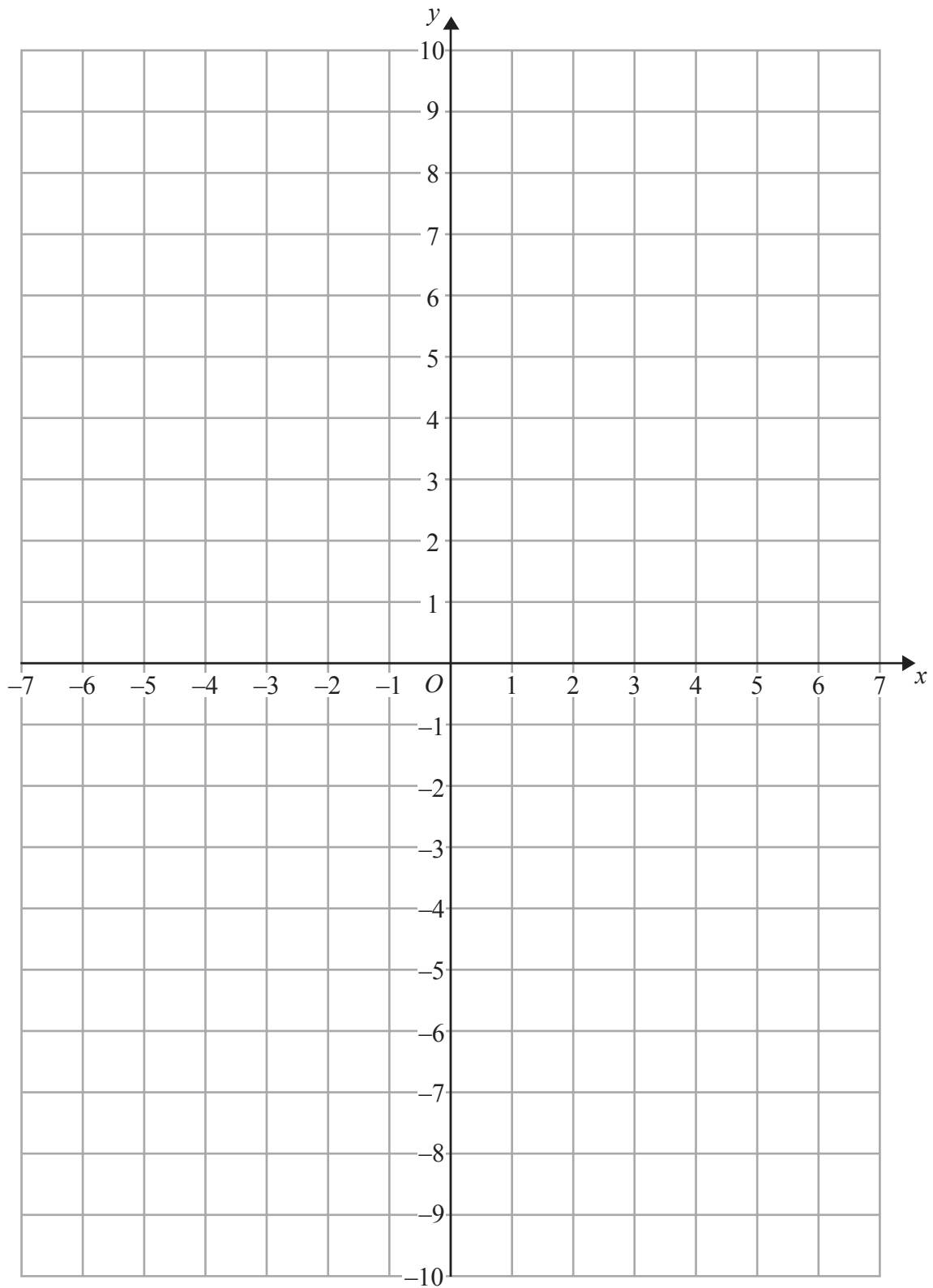
(b) Find the number of points of intersection of the curve $y = 9 - x^2$ and $x^2 + y^2 = 25$
Show clearly how you get your answer.

(2)

(Total for Question 18 is 4 marks)



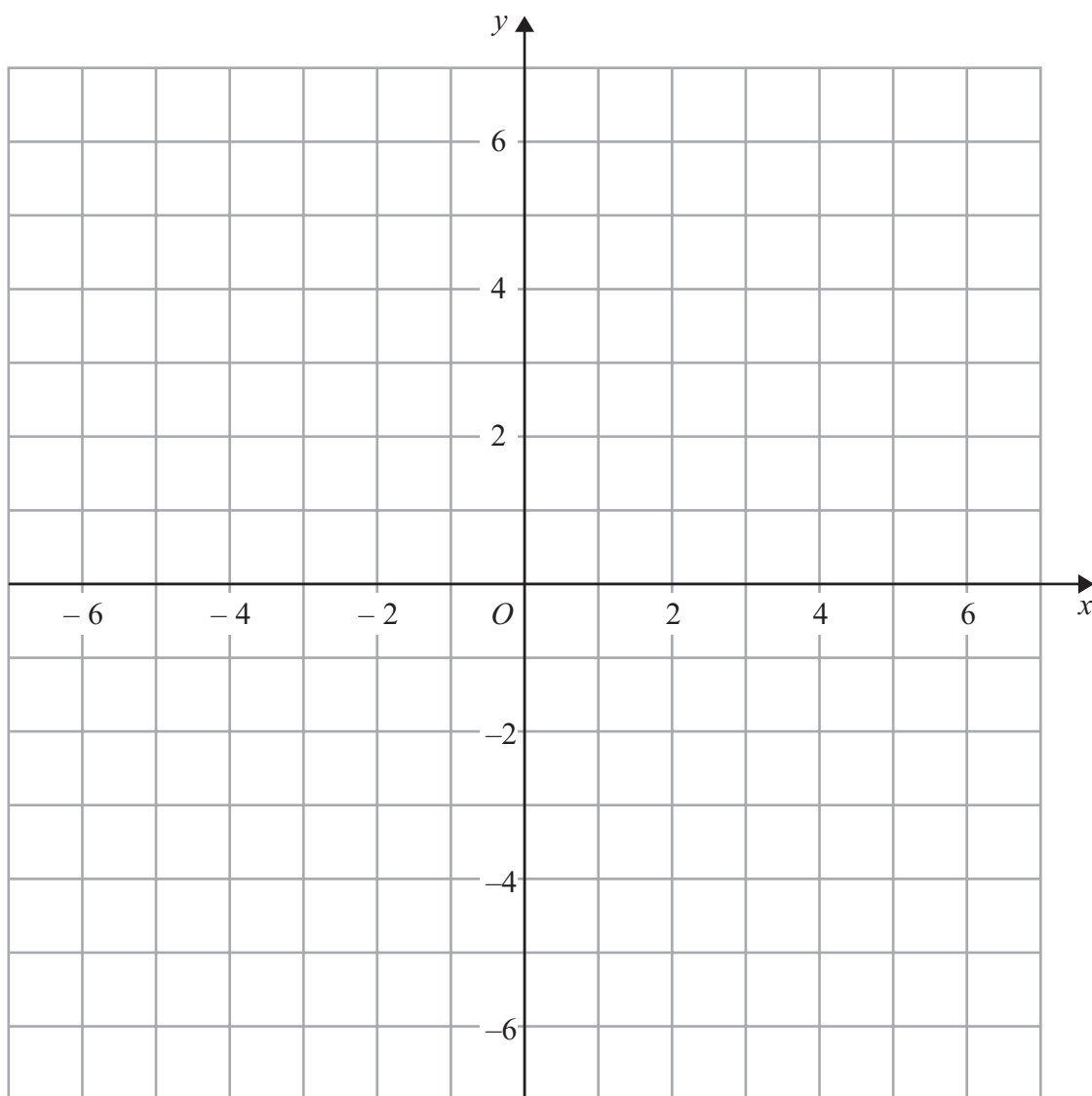
18 On the grid, construct the graph of $x^2 + y^2 - 36 = 0$



(Total for Question 18 is 2 marks)



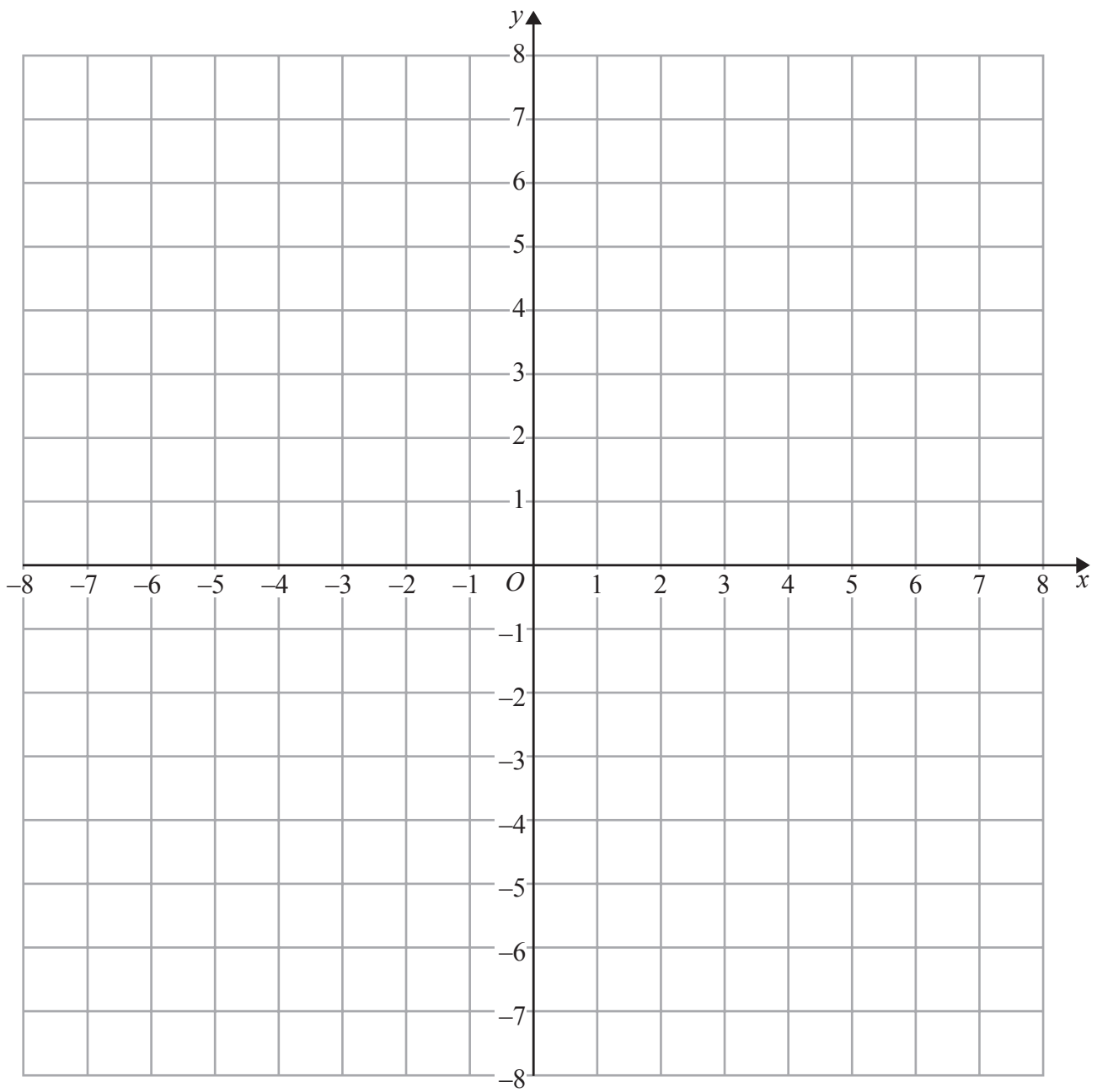
- 2 On the grid of centimetre squares, construct the locus of points that are 5 cm from the point (0,1).



(Total for Question 2 is 2 marks)



10 On the grid, construct the graph of $4x^2 + 4y^2 = 64$



(Total for Question 10 is 2 marks)

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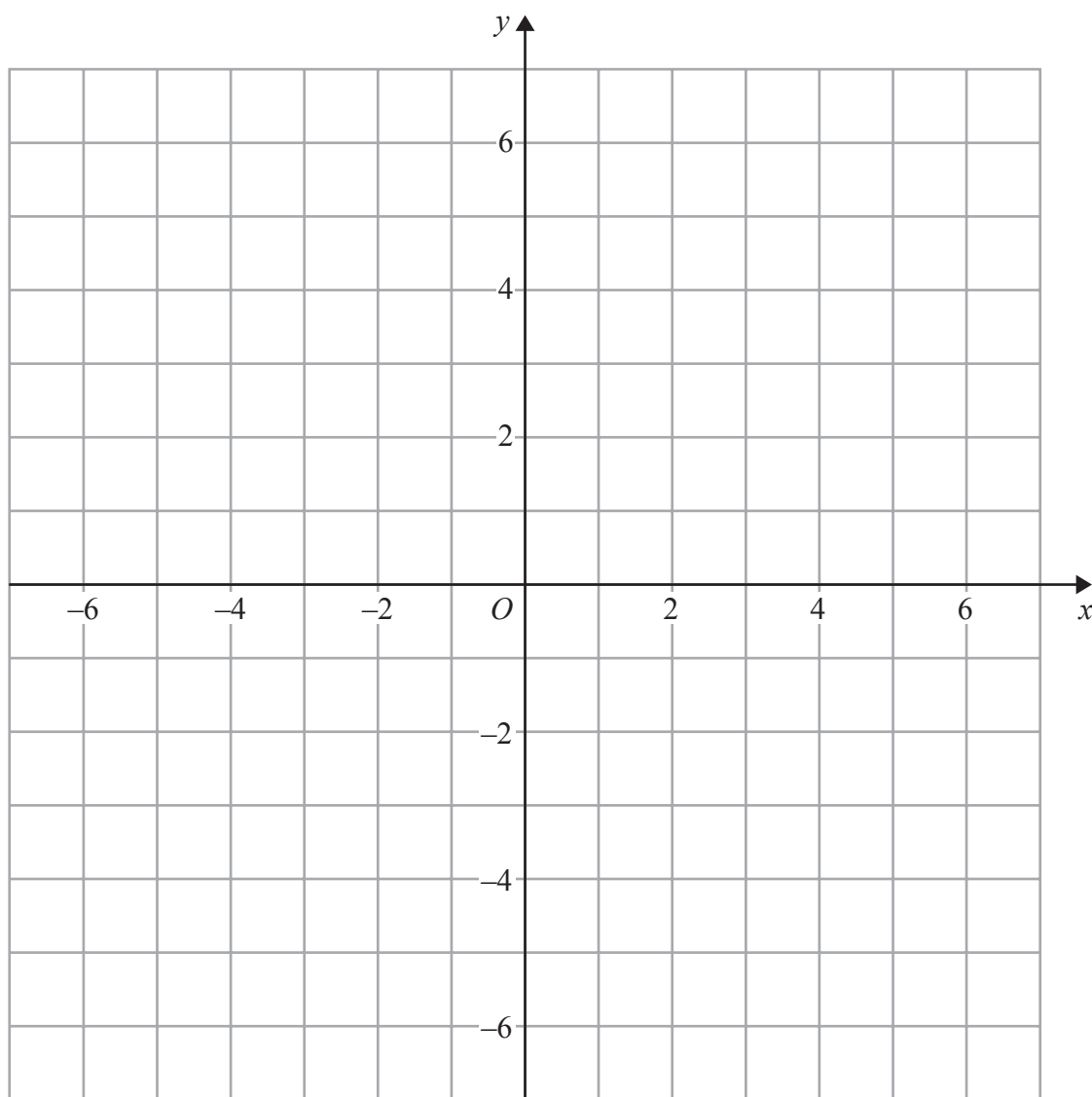
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

- 1 (a) On the grid, construct the graph of $x^2 + y^2 - 25 = 0$



(2)

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A is the point $(3, 4)$

- (b) (i) Draw the tangent to the graph at the point A .
- (ii) Write down the size of the angle between the tangent to the graph at A and the normal to the graph at A .

.....
(2)

(Total for Question 1 is 4 marks)

2 $w = \frac{4t^2}{t^2 + 2}$

Make t the subject of the formula.

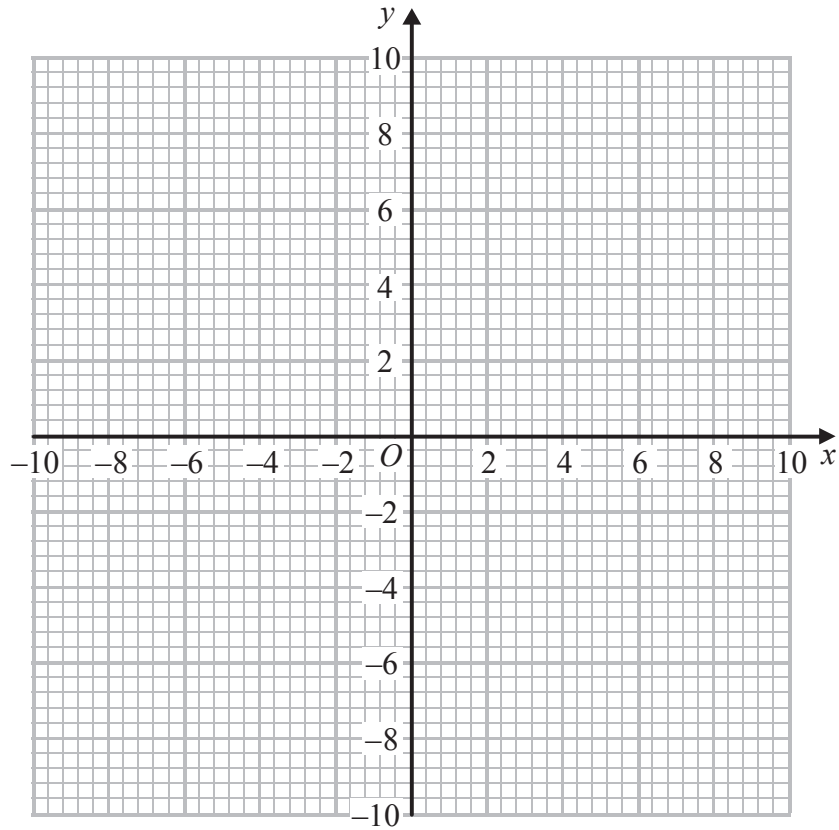
.....
(Total for Question 2 is 3 marks)



9 A circle has equation $x^2 + y^2 = 49$

Does the point with coordinates (6, 6) lie inside or outside this circle?

Show clearly how you get your answer.



(Total for Question 9 is 2 marks)

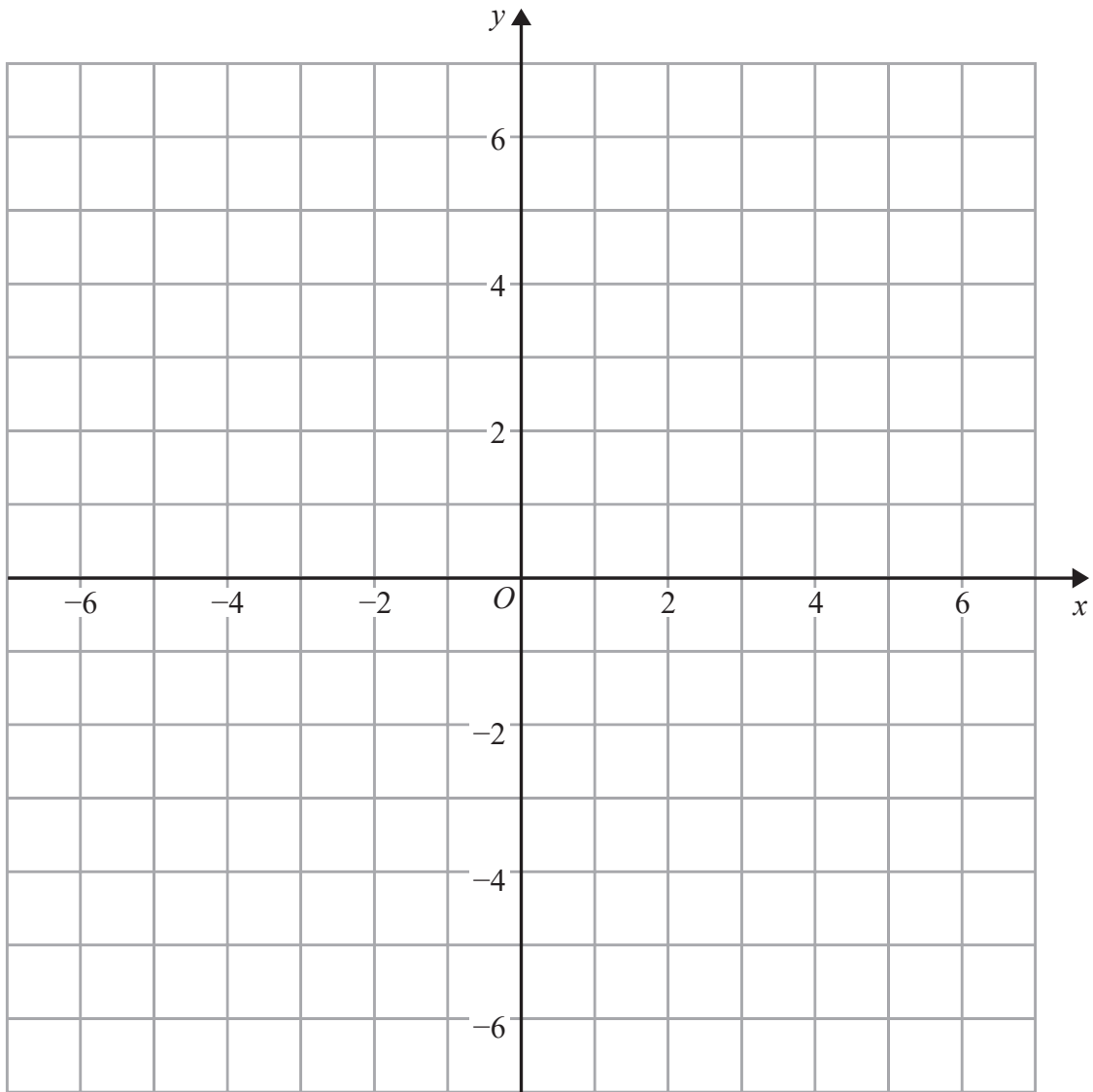


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4 On the grid of centimetre squares, construct the locus of points that are 3 cm from the point (2, 0)



(Total for Question 4 is 2 marks)

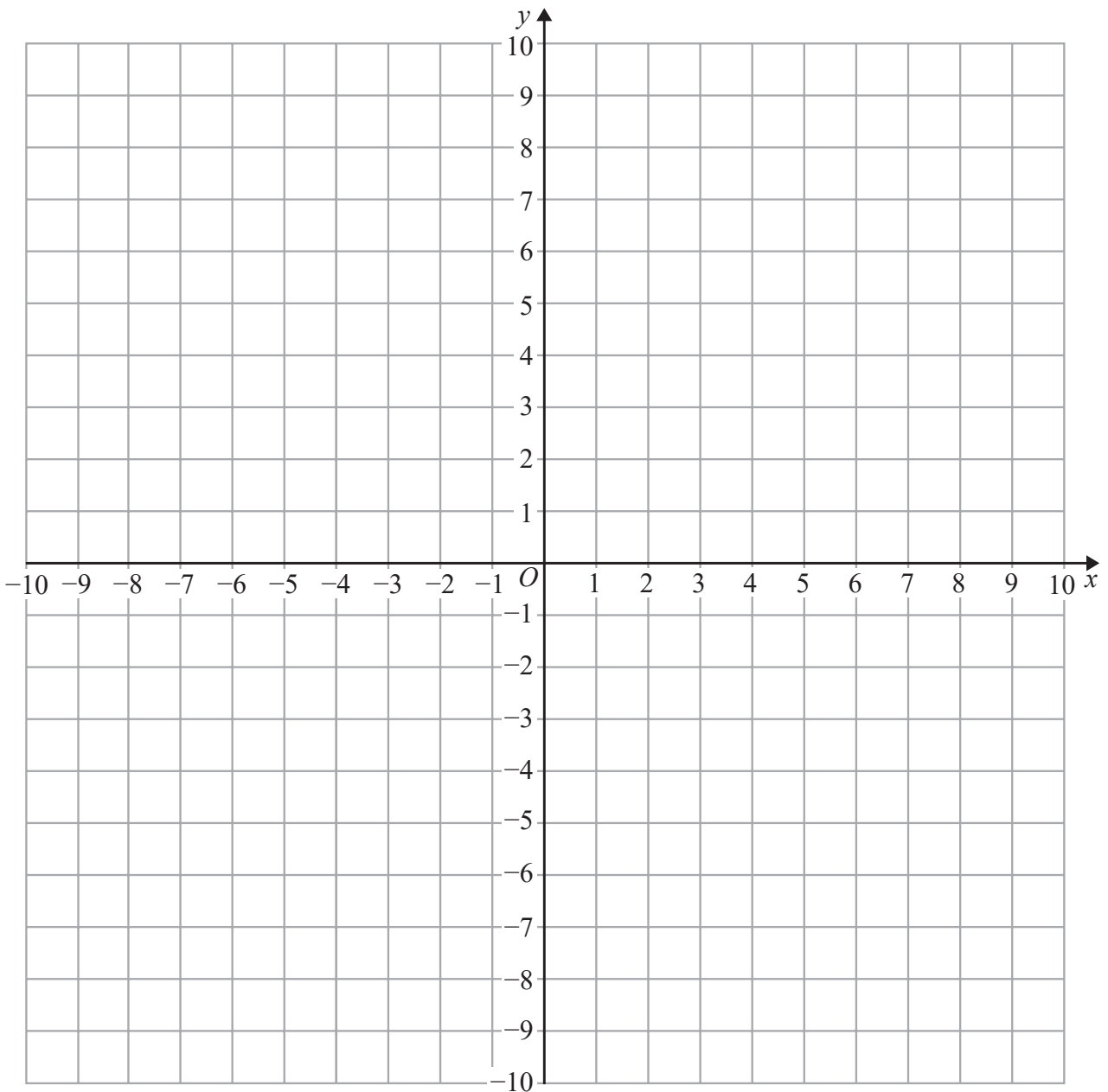


6 (a) On the grid, construct the graph of $x^2 + y^2 - 64 = 0$

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(2)



(b) Make y the subject of $x^2 + y^2 - 64 = 0$

.....
(2)

(Total for Question 6 is 4 marks)

7 Express $(\sqrt{125} - \sqrt{5})(\sqrt{8} - \sqrt{2})$ in the form $a\sqrt{b}$ where a and b are integers.

.....
(Total for Question 7 is 3 marks)

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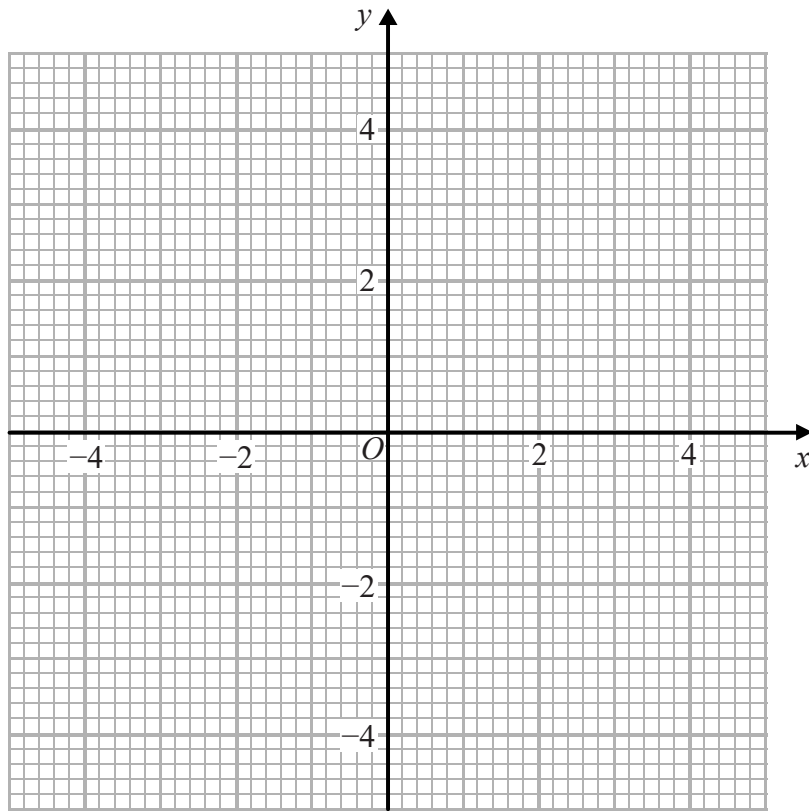


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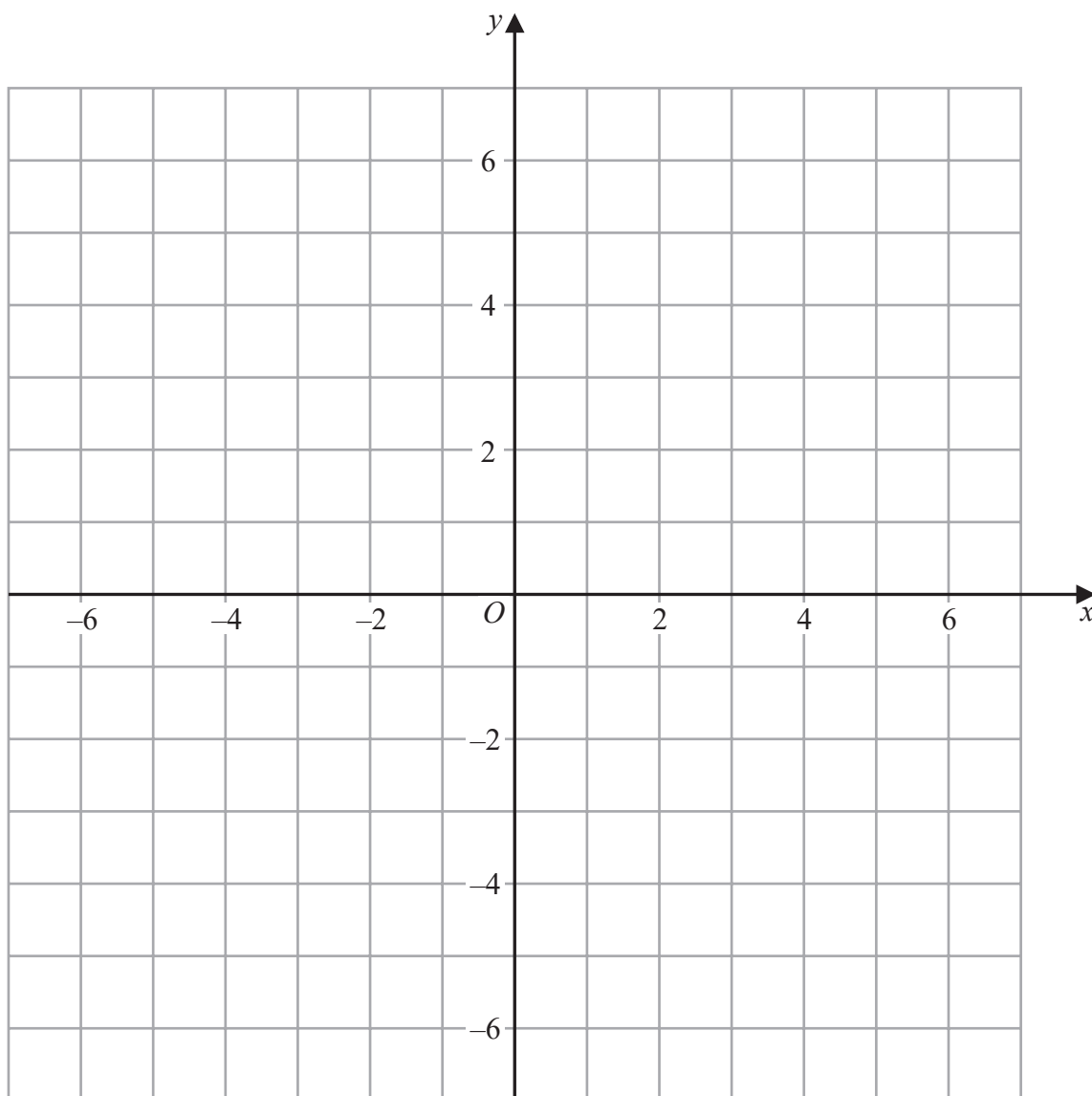
2 On the grid, construct the graph of $y^2 = 4 - x^2$



(Total for Question 2 is 2 marks)



- 6 On the grid of centimetre squares, construct the locus of points that are 4 cm from the point $(-2, 1)$



(Total for Question 6 is 2 marks)

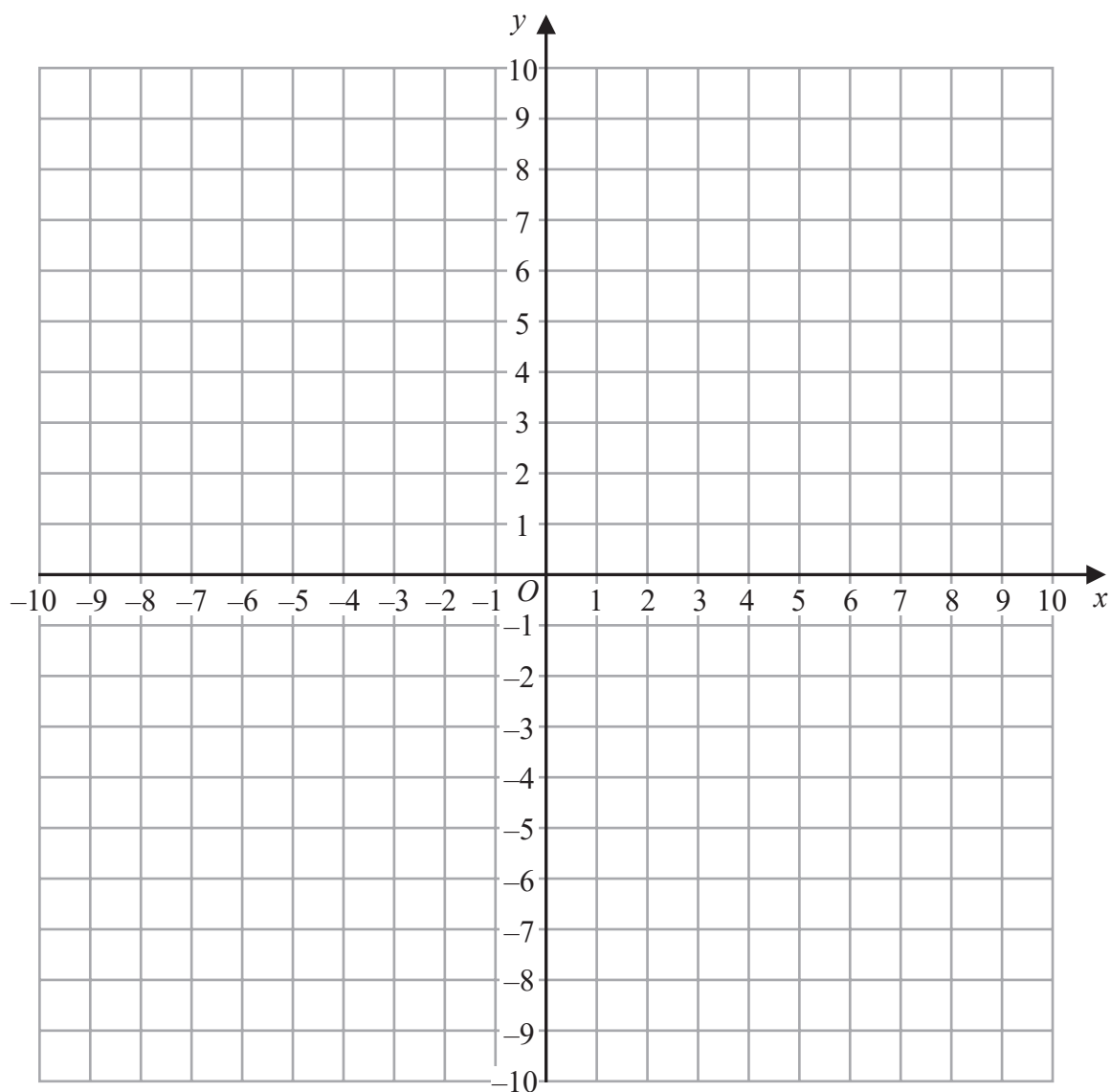
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2 On the grid, construct the graph of $y^2 = 25 - x^2$



(Total for Question 2 is 2 marks)

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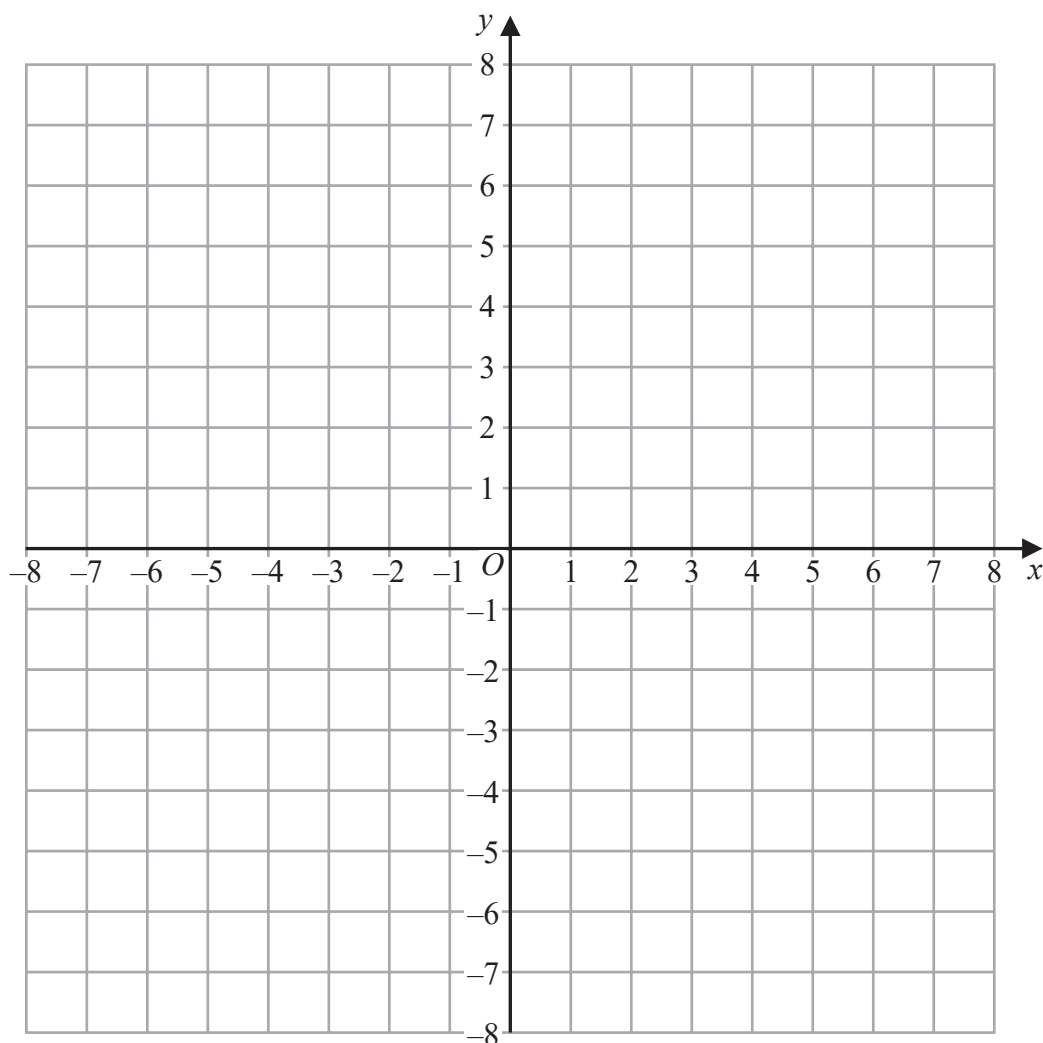
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P 6 6 1 2 8 R A 0 3 2 4

- 5 (a) On the grid, construct the graph of $x^2 + y^2 = 49$



(2)

Given that $a > 0$, the point A with coordinates $(0, a)$ lies on the graph of $x^2 + y^2 = 49$

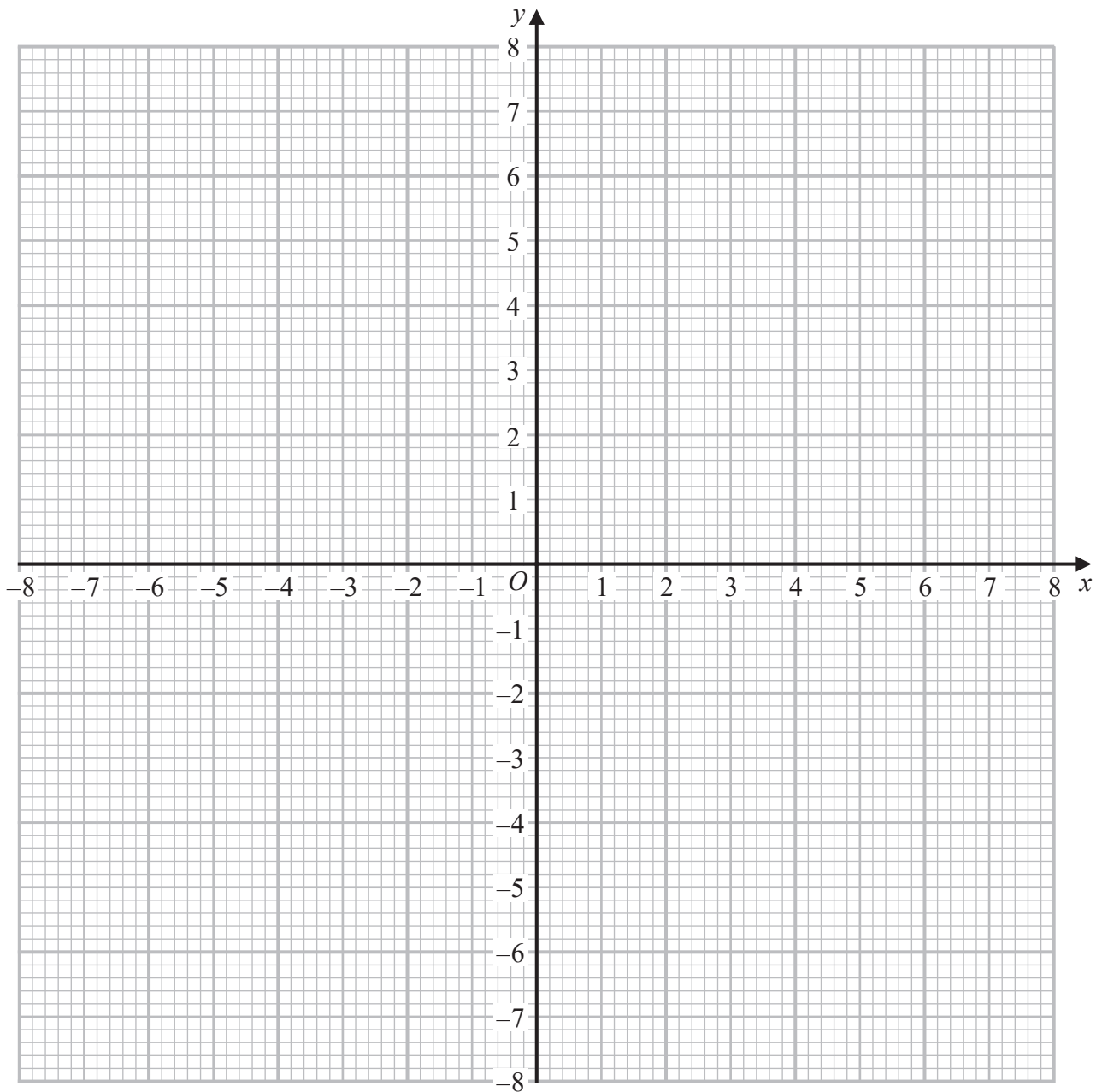
- (b) Draw a tangent to this graph at A .

(1)

(Total for Question 5 is 3 marks)



4 On the grid, construct the graph of $x^2 + y^2 = 16$



(Total for Question 4 is 2 marks)

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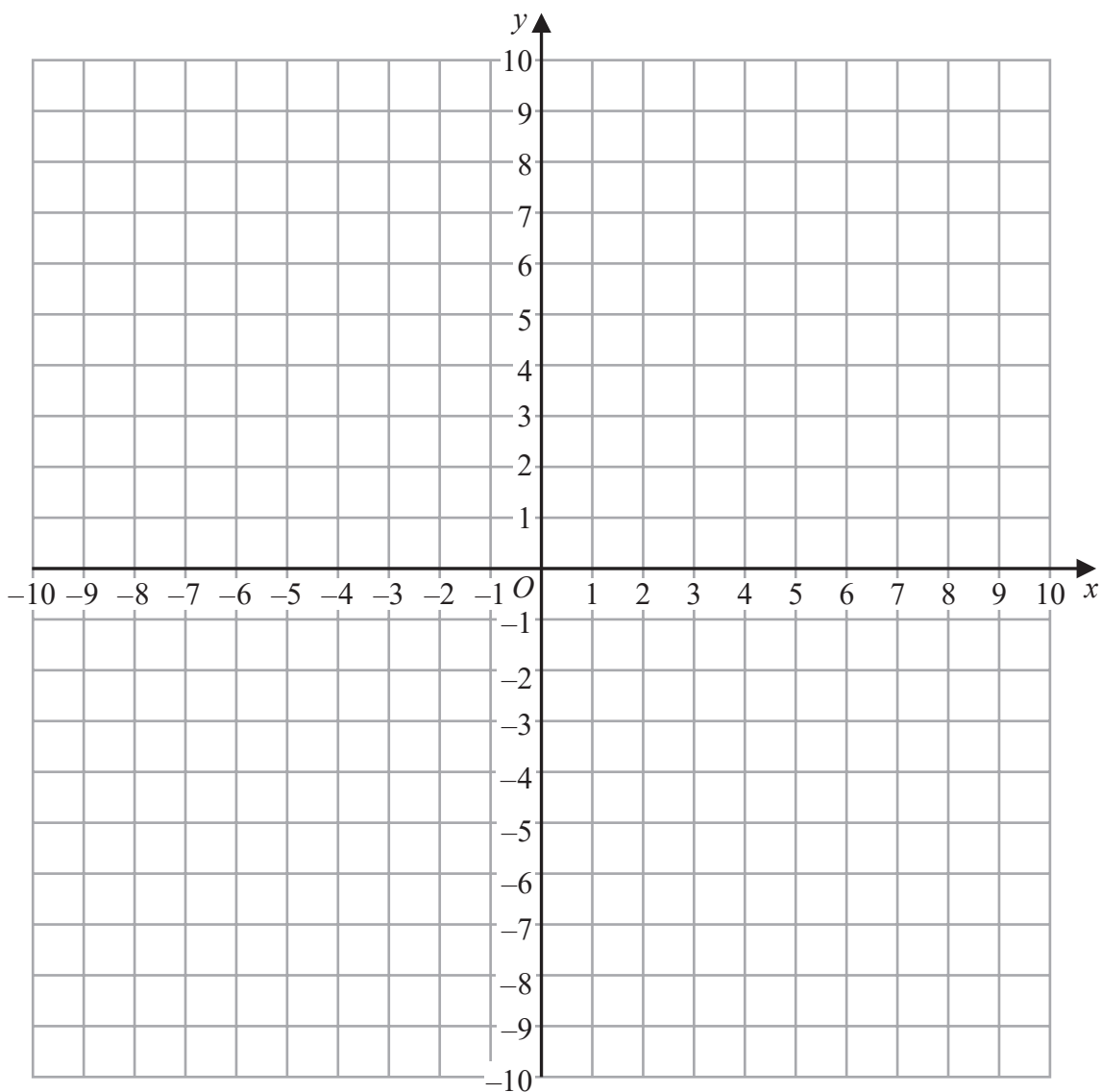
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P 6 8 7 8 7 A 0 5 2 4

5 (a) On the grid, construct the graph of $3x^2 + 3y^2 = 75$



(2)

(b) Make y the subject of $3x^2 + 3y^2 = 75$

.....
(3)

(Total for Question 5 is 5 marks)

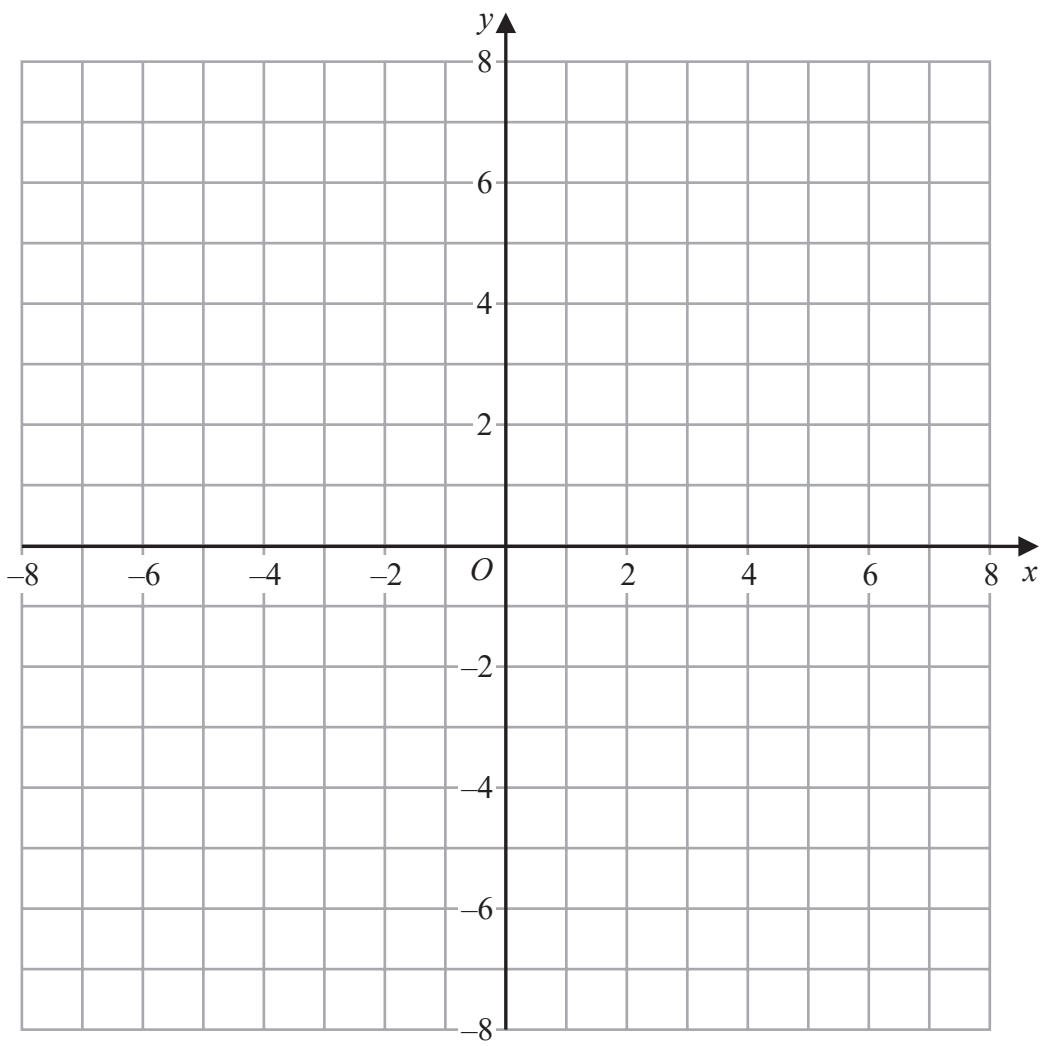


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5 (a) On the grid, construct the graph of $x^2 + y^2 = 16$



(2)

The point P with coordinates $(p, 0)$ lies on the graph of $x^2 + y^2 = 16$

Given that $p > 0$,

(b) write down the equation of the tangent to the graph at the point P .

.....
(1)

(Total for Question 5 is 3 marks)

