

# Non-Linear Simultaneous Equations



SCAN ME



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REVISE THIS TOPIC

CHECK YOUR ANSWERS

1 Solve algebraically the simultaneous equations

$$y = x^2 - 3x - 4$$

$$y = 2x - 10$$



[5 marks]

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Answer \_\_\_\_\_

2 Solve algebraically the simultaneous equations

$$y = x^2 + 5x - 8$$

$$y - 4x = 4$$



[5 marks]

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Answer \_\_\_\_\_

10





3 Solve algebraically the simultaneous equations

$$y = 3x^2 + 2x - 8$$

$$y = 9x - 10$$



[5 marks]

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Answer \_\_\_\_\_

4 A curve has equation  $y = x^2 - 5x + 10$

A line has equation  $y = 3x - 6$



Find the coordinates of the point of intersection of the curve and the line. [4 marks]

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Answer ( \_\_\_\_\_ , \_\_\_\_\_ )





5 A curve has equation  $y = 5x^2 - x - 15$   
A line has equation  $y = 10x - 3$



Find the coordinates of the points of intersection of the curve and the line.

[5 marks]

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Answers ( \_\_\_\_\_ , \_\_\_\_\_ ) and ( \_\_\_\_\_ , \_\_\_\_\_ )

6 Solve algebraically the simultaneous equations

$$y = x^2 + x + 1$$
$$y = x + 3$$



Give your answers as exact values.

[5 marks]

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Answer \_\_\_\_\_

Turn over ►





7 Solve algebraically the simultaneous equations



$$x^2 + y^2 = 100$$
$$y = x - 2$$

[5 marks]

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Answer \_\_\_\_\_

8 Solve algebraically the simultaneous equations



$$x^2 + y^2 = 200$$
$$y = 2x - 10$$

[5 marks]

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Answer \_\_\_\_\_





9 A circle has equation  $x^2 + y^2 = 65$   
A line has equation  $2y = 10 - x$



Find the coordinates of the points of intersection of the circle and the line.

[5 marks]

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Answers ( \_\_\_\_\_ , \_\_\_\_\_ ) and ( \_\_\_\_\_ , \_\_\_\_\_ )

10 A circle has equation  $x^2 + y^2 = 85$   
A line has equation  $y + 3x = 25$



Find the coordinates of the points of intersection of the circle and the line.

[5 marks]

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Answers ( \_\_\_\_\_ , \_\_\_\_\_ ) and ( \_\_\_\_\_ , \_\_\_\_\_ )

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Turn over ►





11 Solve algebraically the simultaneous equations

$$x^2 - 2y^2 = 7$$

$$2y = x + 1$$



[5 marks]

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Answer \_\_\_\_\_

12 A curve has equation  $2x^2 - 3y^2 = 7$   
A line has equation  $y = x - 2$



Find the coordinates of the points of intersection of the curve and the line.

[5 marks]

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Answers ( \_\_\_\_\_ , \_\_\_\_\_ ) and ( \_\_\_\_\_ , \_\_\_\_\_ )





13 A curve has equation  $x^2 - 8y^2 = k$  where  $k$  is a positive integer.  
A line has equation  $4y = x - 1$

The curve and the line intersect at the points A and B.  
The  $x$ -coordinate of point A is -7.

13 (a) Work out the value of  $k$ . [3 marks]

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$k =$  \_\_\_\_\_

13 (b) Work out the coordinates of point B. [4 marks]

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B = ( \_\_\_\_\_ , \_\_\_\_\_ )

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