HIGHER

8.1 Quadratic Simultaneous Equations: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve the simultaneous equations $y = 10$ and $x^2 + y^2 = 200$.

(Total for Question 1 is 5 marks)

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2 The line $y = 2x + k$ is a tangent to the curve $y = x^2 - 3x - 3$. Work out the value of k.

(Total for Question 2 is 4 marks)

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3 Solve the simultaneous equations $x + y = -12$ and $x^2 + y^2 = 90$.

(Total for Question 3 is 5 marks)

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4 Solve the simultaneous equations $y = -x - 2$ and $x^2 + y^2 = 100$.

(Total for Question 4 is 5 marks)

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5 Solve the simultaneous equations $x + y = 10$ and $x^2 + y^2 = 58$.

(Total for Question 5 is 5 marks)

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6 Solve the simultaneous equations $x + y = -15$ and $x^2 + y^2 = 117$.

(Total for Question 6 is 5 marks)

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7 Solve the simultaneous equations $x + y = 5$ and $x^2 + y^2 = 17$.

(Total for Question 7 is 5 marks)

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Mark scheme · 8.1 Quadratic Simultaneous Equations: 1-hour Pack

Question 1

substitutes y = mx + c into the circle equation	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
x = -10 and x = 10	**A1**
(-10, 10) and (10, 10)	**A1**

Answer: (-10, 10) and (10, 10)

Question 2

equates the expressions for y	**M1**
rearranges to x^2 - 5x + (-3 - k) = 0 or equivalent	**M1**
uses discriminant b^2 - 4ac = 0	**M1**
k = -37/4	**A1**

Answer: k = -37/4

Question 3

substitutes y = -12 - x	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
both x values correct	**A1**
(-9, -3) and (-3, -9)	**A1**

Answer: (-9, -3) and (-3, -9)

Question 4

substitutes y = mx + c into the circle equation	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
x = -8 and x = 6	**A1**
(-8, 6) and (6, -8)	**A1**

Answer: (-8, 6) and (6, -8)

Question 5

substitutes y = 10 - x	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
both x values correct	**A1**
(3, 7) and (7, 3)	**A1**

Answer: (3, 7) and (7, 3)

Question 6

substitutes y = -15 - x	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
both x values correct	**A1**
(-9, -6) and (-6, -9)	**A1**

Answer: (-9, -6) and (-6, -9)

Question 7

substitutes y = 5 - x	**M1**
expands and simplifies to a quadratic	**M1**
solves the quadratic	**M1**
both x values correct	**A1**
(1, 4) and (4, 1)	**A1**

Answer: (1, 4) and (4, 1)

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