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| Year 10A | | *Non Linear Equations* | Non Calculator |
| * Graph simple non­linear relations with and without the use of digital technologies and solve simple related equations (ACMNA296) * Solve simple quadratic equations using a range of strategies (ACMNA241) * 10 A Solve simple exponential equations (ACMNA270) * 10A Factorise monic and non­monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Section 1Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Find the values of x for which  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve the equation  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | For what values of *m* is  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | For what values of *p* is  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve for *w*:  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve the equation:  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | For what values of *p*, is :  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Give the exact values for which  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Find the solutions to  correct to one decimal place.  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Determine if has any real number solutions, explaining your answer.  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |

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| Year 10A | | *Non Linear Equations* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Section 2Multiple Choice Section | | | |
| Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
|  | The solutions to  are:  A.  B.  C.  D. | | |
|  | For what values of *x* is ?  A.  B.  C.  D. | | |
|  | The solutions to  are:  A.  B.  C.  D. | | |
|  | For what values of *k* is ?  A.  B.  C.  D. | | |
|  | The solutions to  are:  A.  B.  C.  D. | | |
|  | Solve .  A.  B.  C.  D. | | |
|  | The graph of  is shown.  Estimate the solution to  A.  B.  C.  D. | | |
|  | Find all the solutions to  A.  B.  C.  D. | | |
|  | The solutions to  are:  A.  B.  C.  D. | | |
|  | Solve .  A.  B.  C.  D. | | |
|  | For what value of x is  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |

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| Year 10A | *Non Linear Equations* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Section 3Longer Answer Section | | |
| Answers should be supported by relevant mathematical reasoning and/or calculations.  Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
| --- | --- | --- |
| 1. | (a) Solve  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………… | **2** |
|  | (b) Lisa is six years younger than her brother Marty. In two year’s time, the product of their ages will be 280.   1. Using *m* to represent Marty’s current age, write expressions for both of their ages in two years time.   ……………………………………………………………………………………………….   1. Write an equation for the product of their ages in two years from now and solve it to find their current ages.   ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………  ………………………………………………………………………………………………. | **1**  **3** |
| 2. | Solve simultaneously    ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………  ………………………………………………………………………………………………. | **2** |

# Non Linear Equations

# Multiple Choice Answer Sheet

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

*Non Linear Equations*

# ANSWERS

|  |  |
| --- | --- |
| Section 1 ( 1 mark each) | |
|  | Working and Answers |
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| --- | --- | --- |
| Section 2 (1 mark each) | | |
|  | Working | Answers |
|  |  | D |
|  |  | D |
|  |  | A |
|  |  | B |
|  |  | C |
|  |  | B |
|  |  | C |
|  |  | A |
|  |  | A |
|  |  | C |
|  |  | B |
|  |  | D |

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| Section 3 | |  |
|  | Working and Answers | Marks |
| 1. | a) | 1 for expanding and simplifying  1 for solving |
|  | b) i)  ii) | 1 for both correct  1 for equation  2 for solution |
| 2. |  | 1 for substituting and simplifying  1 for solving |

# Non Linear Equations

# Multiple Choice Answer Sheet

Name \_\_\_ Marking Sheet

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D