**YEAR 11 TEST 5 Review Homework CALCULATOR HIGHER**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Common Graphs** | **/10** | **Inequalities** | **/15** | **Loci Vectors** | **/10** | **Algebraic fractions** | **/15** |

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|  | **Algebra: Graphs** | | | |  |
| **1.**  **S** | Sketch the graphs of   |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | | | | | **(4)** |
|  |  |  |  |  |  |
|  |  | | | |  |
| **2.**  **F** | |  |  |  | | --- | --- | --- | | A | B | C |   Write down the letter of the graph which could have the equation:   |  |  |  | | --- | --- | --- | | *y* = *x*2 + 2*x* − 3 | *y* = 3*x* − 4 − *x*2 | *y* = *x*2  + 5*x* + 4 | |  |  |  | | | | | **(2)** |
| **3.**  **M** | Kaitlin runs for 12 seconds.  Her speed, in metres per second, is shown in the graph.    a)      Work out the distance she runs.  …………  b)     Work out Kaitlin’s deceleration during the last 4 seconds.  ………… m/s² | | | | **(2)**  **(2)** |
|  | **Algebra: Inequalities** | | | |  |
| **1.**  **S** | Write the inequality shown by the diagram.   |  |  | | --- | --- | |  | …………………………………… | | | | | **(2)** |
| **2.**  **F** | Work out **all** the integers that satisfy the inequality   3 < 3 *x* - 2 ≤ 17  ………………………… | | | | **(2)** |
| **3.**  **F** | Solve    3*x* − 7 ≤ 5*x* + 14  ………………………… | | | | **(3)** |
| **4.**  **F** | On a copy of the axes shown, draw lines to show the region satisfied by the three inequalities.   |  |  |  | | --- | --- | --- | | *x* | ≤ | 4 |  |  |  |  |  | | --- | --- | --- | --- | | *y* | ≥ | 5 *-* | *x* |  |  |  |  | | --- | --- | --- | | *y* | ≤ | 1 + *x* |   Label the region clearly with the letter R | | | | **(3)** |
| **5.**  **M** | Solve  ………………………… | | | | **(3)** |
| **6.**  **M** | https://app.doublestruck.eu/content/AG_MA/HTML/Q/Q17J3H21_files/img01.jpgHere is a sketch of *y* = f(*x*) where  f(*x*) is a quadratic function.  The graph intersects the *x*-axis  where *x* = −2.5 and *x* = 1    Write down the solution of f(*x*) > 0  ………………………… | | | | **(2)** |
|  | **Geometry: Loci and Vectors** | | | |  |
| **1.**  **S** | Use ruler and compasses to bisect this angle. | | | | **(1)** |
| **2.**  **F** | The diagram shows the plan of a living room.  A new plug socket is to be fitted to one of the walls.  It must be **equidistant from the two aerial sockets**  Use a ruler and compasses to show where a socket could be fitted. Mark the positions of the new socket with the letter S.  Aerial socket  Aerial socket | | | | **(2)** |
| **3.**  **F** | **a** = and **b** = Find the vectors    a) **b** – **a** …………………………b) a + 2**b** ………………………… | | | | **(2)** |
| **4.**  **M** | *OABC* is a parallelogram. *BCD* is a straight line. *BD* = 3*BC*.  *M* is the midpoint of *OC*.  a) Find, in terms of *x* and *y*,  (i)  …………………………  (ii)  …………………………  b) Use your answers to write down a geometric fact about the lines *AM* and *OD*.  ……………………………………………………………………………………………………………………………………………………… | | | | **(2)**  **(2)**  **(1)** |
|  | **Algebra: Algebraic fractions** | | | |  |
| **1.**  **S** | Simplify fully  ………………………… | | | | **(4)** |
| **2.**  **F** | Write as a single fraction  ………………………… | | | | **(3)** |
| **3.**  **M** | Simplify  ………………………… | | | | **(4)** |
| **4.**  **M** | Show that simplifies to 3.  ………………………… | | | | **(4)** |