**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

|  |  |  |  |
| --- | --- | --- | --- |
| $$y=\frac{2}{x}$$ | $$y=sinx$$ | $$y=x^{3}$$ | $$y=x^{2}-3$$ |

 | **(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 $3x-2<\frac{7x + 9}{3}$     ………………………… | **(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 socketAerial socket | **(2)** |
| **3.****F** | **a** = $\left(\begin{array}{c}-3\\-5\end{array}\right)$ and **b** = $\left(\begin{array}{c}4\\-1\end{array}\right)$ 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*.$$\vec{OA}=x and \vec{AB}=Y $$a) Find, in terms of *x* and *y*, (i) $\vec{AM}$  ………………………… (ii) $\vec{OD}$   …………………………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 $\frac{2x^{2} + 3x + 1}{x^{2} - 3x - 4}$………………………… | **(4)** |
| **2.****F** | Write as a single fraction  $\frac{5}{x - 3} - \frac{2}{x + 2}$     ………………………… | **(3)** |
| **3.****M** | Simplify $\frac{2x - 4}{x^{2} + 2x - 8} ÷ \frac{x - 4}{(x^{2} - 16)}$ ………………………… | **(4)** |
| **4.****M** | Show that $\frac{3(x + 2)}{x^{2} - 3x - 10} × \frac{x^{2} - 25}{x + 5}$ simplifies to 3.………………………… | **(4)** |