**YEAR 11 TEST 5 Revision NON-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 following graphs. Make sure you label any intercepts on the axes. a) $y=x^{3}$ b) $y=x^{2}$ c) $y=\frac{1}{x}$ d) $y=2^{x}$   | **(4)** |
|  |  |  |  |  |  |
|  |  |  |
| **2.****F** |

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| --- | --- | --- |
| *A* | *B* | *C*  |

Match the letter of the graph with the number of the possible equation:

|  |  |  |
| --- | --- | --- |
| *1* | *2* | *3* |
| *y = x2 + 6x + 5* | *y = -5 + 6x - x2*  | *y = x2  + 4x - 5* |

 | **(2)** |
| **3.****F** | The graph of y = f(*x*) is shown.1. Write down the co-ordinates of the turning point of the graph.

( …… , …… )1. Write down the roots of f(*x*) = 0

………… and …………1. Use the graph to find an estimate of f(1.5)

………… | **(1)****(1)****(1)** |
| **5.****M** | Matt sketches the graph of $y=0.5^{x}$ for *x* ≥ 0.Make one criticism of his sketch.………………………………………………………………………………………………………………………………………………………………………… | **(1)** |
|  | **Algebra: Inequalities** |  |
| **1.****S** |

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| --- | --- | --- | --- |
| a) | Write the inequality shown below.………………………… | b) | Write down the integer values satisfied by this diagram.………………… |
|  |  |
|  |  |

 | **(2)****(2)** |
| **2.****F** | How are the integer values for A and B different?A: Solve  3 ≤ 3*x* < 18 B: Solve  3 < 3*x* ≤ 18……………………………………………………………………………………………………………………………………………………… | **(1)** |
| **3.****F** | Work out **all** the integers that satisfy the inequality:   12 < 3*x* ≤ 24………………………… | **(1)** |
| **4.****F** | Solve    3(2*x* + 1) > 4*x* – 5…………………………***x******y*** | **(2)** |
| **5.****F** | Show the region satisfied by the three inequalities.

|  |  |  |
| --- | --- | --- |
| *y* | ≥ | 1 |
| *y* | ≤ | *x* |
| *y* | ≤ | 3 *- ½ x* |
|  |  |  |

Label the region clearly with the letter R | **(3)** |
| **6.****M** | Joe draws this graph to identify the region R represented by*y* ≤ *x*  + 2  and  *y* > 3 − *x*  and  *x* < 3 Make **a** criticism of his graph……………………………………………………………………………………………………………………………………………… | **(1)** |
| **6.****M** | Solve $3x-1<\frac{3x + 8}{4}$     ………………………… | **(3)** |

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|  | **Geometry: Loci and Vectors** |  |
| **1.****F** | Use ruler and compasses to **construct** an angle of 60° | **(1)** |
| **2.****S** | $a=\left(\begin{array}{c}-4\\-1\end{array}\right) $ and $b=\left(\begin{array}{c}3\\-1\end{array}\right)$ Calculate the following:a) $a+b$ ………………………… b) $2a-b$ ………………………… | **(2)** |
| **3.****F** | *OAB* is a triangle.$\vec{OA}=$ **a**$\vec{OB}=$ **b**a)   Write down the vector $\vec{AB}$ in terms of **a** and **b**. …………………………*X* is the point on *AB* such that *AX* : *XB* = 1 : 2b)   Express the vector $\vec{AX} $in terms of **a** and **b**. ………………………… | **(1)****(2)** |
| **4.****M** | *ABC* is a straight line.$\vec{OA}=2a+b$ $\vec{OB}=3a+2b$a) Express $\vec{AB}$ in terms of $a$ and $b$.  Give your answer in its simplest form. …………………………*AB* : *BC* = 1 : 3b) Express $\vec{AC}$ in terms of $a$ and $b$.  Give your answer in its simplest form. ………………………… | **(1)****(3)** |
|  | **Algebra: Algebraic fractions** |  |
| **1.****F** | Express as a single fraction in its simplest form $\frac{2x + 5}{3}+\frac{x - 3}{5}$     ………………………… | **(3)** |
| **2.****F** | Write as a single fraction  $\frac{2}{x - 3}-\frac{1}{2x + 1}$   …………………………   | **(4)** |
| **3.****F** | Simplify $\frac{3x + 12}{x^{2} - 2x - 8}×\frac{(x - 4)(x + 2)}{x^{2} + 5x + 4}$ ………………………… | **(4)** |
| **4.****M** | Simplify $\frac{(x + 2)(x +4 )}{x^{2} - 4x - 12}÷\frac{x(x + 4)}{x^{2} - 36}$ ………………………… | **(4)** |