| **Question** | **Scheme** | | **Marks** |
| --- | --- | --- | --- |
| **1** | Either | Or |  |
|  |  | M1 |
| or | or | M1 |
|  | Correct 3 terms | A1 |
|  |  | M1 |
|  |  | A1 |
|  |  | M1A1 |
|  |  | | **(7 marks)** |
| **2** |  | | M1 |
|  | | M1 A1 |
|  | | M1 |
|  | | A1 cso |
| Sub into  or  Sub into | | M1 |
|  | | A1 |
|  |  | | **(7 marks)** |
| **3** |  | | M1 |
|  | | A1 |
|  | | dM1 A1 |
| *y* = –, | | M1 A1 |
|  |  | | **(6 marks)** |
| **4(a)** |  | | M1 |
| So | | A1cso |
|  |  | | **(2)** |
| **4(b)** |  | | M1A1 |
| (oe) | | A1 |
|  |  | | **(3)** |
| **4(c)** | so | | M1 |
| , | | A1A1 |
|  |  | | **(3)** |
|  |  | | **(8 marks)** |
| **5(a)** | 5*x* > 20 | | M1 |
| ***x* > 4** | | A1 |
|  |  | | **(2)** |
| **5(b)** |  | |  |
| [ = 0] | | M1 |
| *x* = 6, | | A1 |
| *, x >* 6 | | M1A1ft |
|  |  | | **(4)** |
|  |  | | **(6 marks)** |
| **6(a)** | 6*x* + *x >* 1 – 8 | | M1 |
| *x* >  1 | | A1 |
|  |  | | **(2)** |
| **6(b)** | (*x* + 3)(3*x* – 1) [= 0] ⇒ *x* = – 3 and | | M1A1 |
|  | | M1A1ft |
|  |  | | **(4)** |
|  |  | | **(6 marks)** |
| **7(a)** |  | |  |
|  | | M1 |
|  | | A1 |
|  |  | | **(2)** |
| **7(b)** | Obtain  and attempt to solve | |  |
| e.g.= 0 so *x* = , or | | M1 |
| 12, –3 | | A1 |
|  | | M1A1 |
|  |  | | **(4)** |
| **7(c)** |  | | A1cso |
|  |  | | **(1)** |
|  |  | | **(7 marks)** |
| **8(a)** | *b*2 – 4*ac* = (*k* − 3)2 – 4(3 − 2*k*) | | M1 |
| *k*2 – 6*k* + 9 – 4(3 − 2*k*) > 0 or (*k* − 3)2 – 12 + 8*k* > 0 or better | | M1 |
| *k*2 + 2*k* − 3 > 0 | | A1 cso |
|  |  | | **(3)** |
| **8(b)** | (*k* + 3)(*k* – 1) [= 0] | | M1 |
| Critical values are *k* = 1 or *k* = – 3 | | A1 |
| (choosing “outside” region) | | M1 |
| *k* > 1 or *k* < – 3 | | A1 cao |
|  |  | | **(4)** |
|  |  | | **(7 marks)** |
| **9(a)** | **Method 1:**  Attempts  for   and their *c* | | M1 |
|  | | A1 |
| or    (with no prior algebraic errors) | | B1 |
| As , then  and so, | | A1 |
| **Method 2:**  Considers  for   and their *c* | | M1 |
|  | | A1 |
| or or  (with no prior algebraic errors) | | B1 |
| and so,  following correct work | | A1 |
|  |  | | **(4)** |
| **9(b)** | Attempts to solve  to give *k* =  ( Critical values, ) | | M1 |
| gives | | M1A1 |
|  |  | | **(3)** |
|  |  | | **(7 marks)** |
| **10(a)** | e.g.  or  or  or | | M1  A1 |
|  | |  |
|  | | A1\* |
|  |  | | **(3)** |
| **10(b)** |  | | M1 |
|  | | A1 |
|  | | M1A1 |
|  |  | | **(4)** |
|  |  | | **(7 marks)** |
| **11(a)** |  | | M1 |
| **Examples** | | dM1 |
| E.g. , | | ddM1 |
| 4*p*2  20*p* + 9< 0 \* | | A1\* |
|  |  | | **(4)** |
| **11(b)** | to obtain *p* = | | M1 |
|  | | A1 |
|  | | M1 A1 |
|  |  | | **(4)** |
|  |  | | **(8 marks)** |
| **12(a)** | o.e | | B1 |
|  | | M1 |
|  | | A1\* |
|  |  | | **(3)** |
| **12(b)** | Mark parts (b) and (c) together | |  |
|  | | B1 |
|  | | M1 |
| Try to solve their  e.g.  so *x* = | | M1 |
| Choose inside region | | M1 |
| or  ( as *x* is a length ) | | A1 |
|  |  | | **(5)** |
| **12(c)** |  | | B1cao |
|  |  | | **(1)** |
|  |  | | **(9 marks)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Source paper** | **Question number** | **New spec references** | **Question description** | **New AOs** |
| 1 | C1 2011 | 4 | 2.4 | Simultaneous equations | 1.1b |
| 2 | C1 2016 | 5 | 2.3 and 2.4 | Simultaneous equations - one linear, one quadratic | 1.1b |
| 3 | C1 2015 | 2 | 2.3 and 2.4 | Solution of simultaneous equations | 1.1b |
| 4 | C1 2013 | 10 | 2.4 | Simultaneous equations, one linear one quadratic | 1.1b, 3.1a, 3.2 |
| 5 | C1 Jan 2012 | 3 | 2.5 | Inequalities | 1.1b |
| 6 | C1 2013 | 5 | 2.5 | Inequalities | 1.1b, 2.1, 2.2a, 2.4, 2.5, 3.1b, 3.3 |
| 7 | C1 2014 | 3 | 2.5 | Solution of linear and quadratic inequalities | 1.1b, 2.2a |
| 8 | C1 Jan 2011 | 8 | 2.3 and 2.5 | Quadratics, Inequalities, Polynomials, Factor theorem | 1.1b |
| 9 | C1 Jan 2013 | 9 | 2.3 and 2.5 | Quadratics, Inequalities | 1.1b, 2.1 and 2.2a |
| 10 | C1 2015 | 5 | 2.3 and 2.5 | Discriminant, solution of inequality by formula | 1.1b, 2.1 and 2.4 |
| 11 | C1 2016 | 8 | 2.3, 2.4, 2.5, 2.6 and 2.7 | Inequalities and discriminant | 1.1b, 2.1 and 3.1a |
| 12 | C1 June 2014R | 6 | 2.5 | Solution of linear and quadratic inequalities | 2.1, 2.2a, 2.4, 3.1b, 3.4 |
| 1 | C1 2011 | 4 | 2.4 | Simultaneous equations | 1.1b |
| 2 | C1 2016 | 5 | 2.3 and 2.4 | Simultaneous equations - one linear, one quadratic | 1.1b |