**1.** (*a*)Expand and simplify (2*x* + 1)(*x* − 4) (2)

(*b*)Expand and simplify (3*x* − 5*y*)2  (2)

(Total for Question 1 is 4 marks)

**2.** (*a*)Simplify  giving your answer in the form *a*, where *a* is an integer. (2)

(*b*)Hence, or otherwise, simplify



 giving your answer in the form *b*, where *b* and *c* are integers and *b* ≠ 1. (3)

(Total for Question 2 is 5 marks)

**3.** (*a*)Simplify  (1)

(*b*)Simplify *a*7 ÷ *a*−3 (1)

(*c*)Simplify (*x*−2)−3 (1)

 can be written in the form *d* − *q f*

(*d*)Work out the value of *d* and the value of *f*. (3)

(Total for Question 3 is 6 marks)

**4.** (*a*)Factorise 63*x*2*d* + 9*xd* 2 (2)

(*b*)Factorise 4*ab* − 8*b* + 2*a* − 4

(3)

(*c*)Factorise *x*2 − 9*t* 2

(1)

(Total for Question 4 is 6 marks)

**5.** f (*x*) = *x*2 – 10*x* + 23

 (*a*)Express f (*x*) in the form (*x* + *a* )2 + *b*, where *a* and *b* are constants to be found. (2)

 (*b*)Hence, or otherwise, find the exact solutions to the equation

*x*2 – 10*x* + 23 = 0 (2)

(Total for Question 5 is 4 marks)

**6.** Factorise completely *x* − 4*x*3. (3)

(Total for Question 6 is 3 marks)

**7.** Solve, algebraically, the simultaneous equations

2*x*2 + 2*y* = 7

2*y* + 2*x* = 3

 (Total for Question 7 is 5 marks)

**8.** Find the set of values of *x* for which

 (*a*) 2(3*x* + 4) > 1 – *x*, (2)

 (*b*) 3*x*2 + 8*x* – 3 < 0. (4)

(Total for Question 8 is 6 marks)

**9.** The line **L** is given by the equation 3*y* – 2*x* = 24.

(*a*) Write the equation for **L** in the form *y* = *mx* + *c*. **(2)**

(*b*) Find an equation of the line parallel to line **L** and which passes through the point (3, 3).

 **(2)**

**(Total for Question 9 is 4 marks)**

**10.** The line *l* passes through the points *A* (3, 1) and *B* (4, – 2).

Find an equation for *l*.

**(Total for Question 10 is 3 marks)**

**11.** A circle *C* has centre (−1, 7) and passes through the point (0, 0).

Find an equation for *C*.

(Total for Question 11 is 4 marks)

**12.** Simplify 

(Total for Question 12 is 2 marks)

**13.** Express  as a single fraction.

 Give your answer in its simplest form.

(Total for Question 13 is 3 marks)

Total 55 marks