**A Level Induction Task**

**Complete on Separate A4 Paper and Show Full Working**

If *ax*2 + *bx* + *c* = 0 then *x* **= **

1. Expand and simplify

 (a) (2*x* + 3)(2*x* – 1) **(2)** (b) (*a* + 3)2 **(2)** (c) 4*x*(3*x* – 2) – *x*(2*x* + 5) **(2)**

2. Factorise

 (a) *x*2 – 7*x* **(2)** (b) *y*2 – 64 **(2)** (c) 2*x*2 + 5*x* – 3 **(2)** (d) 6*t*2 – 13*t* + 5 **(2)**

3. Simplify

 (a)   **(2)** (b) +  **(2)**

4. Solve the following equations

 (a) +  = 4 **(3)** (b) *x*2 – 8*x* = 0 **(3)** (c) *p*2 + 4*p* = 12 **(3)**

5. Write each of the following as single powers of *x* and y

 (a)  **(1)** (b) (*x*2*y*)3 **(1)** (c)  **(1)**

6. Work out the values of the following, giving your answers as fractions

 (a) 4-2 **(1)** (b) 100 **(1)** (c)  **(2)**

7. Solve the simultaneous equations 3*x* – 5y = -11

 5*x* – 2y = 7 **(3)**

8. Rearrange the following equations to make *x* the subject

 (a) *v*2 = u2 + 2a*x* **(2)** (b) V = π*x*2h **(2)** (c) y =  **(3)**

9. Solve 5*x*2 – *x* – 1 = 0 giving your solutions in surd form **(3)**