Formal Home Exercise 3 Quadratics Marks

1) For what values of *k* does the equation *x*2 – 5*x* + (*k* + 6) = 0 have

 equal roots? (3)

2) a) Given *f* (*x*) = *x*2 + 2*x* – 8, express *f* (*x*) in the form (*x* + *a*)2 – *b*. (2)

 b) State the minimum value of the function *f* (*x*). (1)

3) Show that the line with equation *y* = 2*x* + 1 does not intersect the parabola with

 equation *y* = *x*2 + 3*x* + 4. (5)

4) Solve $a^{2 }-6a-16<0$ (3)

5) a) Write $fx=2x^{2}-16x+7 in the form a(x+b)^{2 }+c$ (3)

 b) Hence or otherwise sketch the graph of $y= f(x)$ showing clearly the turning point. (2)

6) Prove that the roots of the equation 2*x*2 + *px* – 3 = 0 are real for all values of *p*. (4)

7) Show that the roots of $k\left(x+1\right)\left(x+4\right)=x are not real if \frac{1}{a}<k<1$ (7)