SPTA
Higher Homework
Quadratic Functions (A)

1. Solve $x^2 - 6x - 16 < 0$ **(2)**

2. Express $f(x) = (2x - 1)(2x + 5)$ in the form $a(x + b)^2 + c$ **(3)**

3. Determine the nature of the roots of each of these equations:

(a) $4x^2 - 2x + 9 = 0$ (b) $8x^2 - 24x + 12 = 0$ (c) $-2x^2 - 4x - 2 = 0$ **(6)**

4. Given that k is a real number, show that the roots of the equation

a. $kx^2 + 3x + 3 = k$

are always real. **(3)**

5. Express $2x^2 - 8x + 13$ in the form $a(x - b)^2 + c$ and hence find the coordinates of the turning point and state its nature.

(4)

6. Find the value(s) of p so that the roots of the following equation are equal

1. $x^2 + (p - 5)x + 4p = 0$ **(4)**

7. Find c such that the line $y = x + c$ is a tangent to the curve $y = x^2 - 3x$,

and find the coordinates of the point of contact. **(4)**