Quadratics : Completing the Square : 6

1) Express $4x^2 - 8x + 7$ in the form $a(x+b)^2 + c$.

Use your answer to find the greatest value of

$$\frac{1}{4x^2 - 8x + 7}$$

2) Express $2x^2 + 12x - 7$ in the form $a(x+b)^2 + c$ where a, b and c need to be identified.

Hence find the least value of $6x^2 + 36x - 17$

3) Show that $x^2 - 1{\cdot}4x - 8{\cdot}51$ may be expressed in the form $(x+p)^2 - 9$ where p is a constant to be found.

Hence solve $x^2 - 1{\cdot}4x - 8{\cdot}51 = 0$

4) Express $-x^2 + 6x - 7$ in the form $-(x+a)^2 + b$ where a and b need to be found.

Hence sketch the graph $y = -x^2 + 6x - 7$, indicating the coordinates of its stationary point.

5) Express $3x^2 - 6x + 5$ in the form $a(x+b)^2 + c$, evaluating a, b and c.

Use your answers to find the greatest value of

$$\frac{1}{3x^2 - 6x + 11}$$

6) Express $3x^2 - 12x + 29$ in the form $a(x+b)^2 + c$

Use your answers to sketch the graph $y = 3x^2 - 12x + 29$ clearly indicating its stationary point.

7) Express $x^2 + 8x + 5$ in the form $(x+a)^2 + b$.

Use your answer to find the least value of $3x^2 + 24x + 15$ and give the corresponding value of x.