This week's assignment is a review of the things we learnt in the past 2 weeks, namely completing perfect squares and factoring common factors.

You should use this assignment to practice the mathematical concepts you have learnt, as well as presenting your answer in a clear and easily readable manner. It is just as important to be able to present your answer as solving the problem itself.

1. Write the following functions in the vertex form and plot any 5 them. Refer to your notes from last 2 classes if necessary.

   (a) $f(x) = x^2 + 6x + 5$

   (b) $f(x) = x^2 + 18x - 59$

   (c) $f(x) = -x^2 - 10x + 31$

   (d) $f(x) = 3x^2 + 32x - 150$

   (e) $f(x) = 2x^2 - 12x$

   (f) $f(x) = -5x^2 - 70x$

2. Simplify by adding like terms.

   (a) $2x + 6x + 5x + 3$

   (b) $x^2 + 4x^2 + 3 + x + 6 - 9x$

   (c) $x^2 - 6x^3 + 6x^2 - 3 - 4x + 5x^3 - 4$

   (d) $5x - 4x + x^2 - 6 + 3x^2 + 1$

3. Factor out all the common factors, so the final answers are only products of factors.

   (a) $3x^2 + 18x + 179$

   (b) $14 + 2x + 50x^2$

   (c) $x^3 + 4x^2 + x$

   (d) $-7x^2 + 15x^5 - 81x + 9x^4 + x^2 + 12x^3$