(1) Factor the following polynomials.

(a) $P(x) = x^3 - 3x^2 - 18x$

(b) $P(x) = x^4 + 4x^3 12x^2$

(2) Sketch the graph of the polynomial $P(x) = (x+1)(x-1)2(x-3)$ using end behaviour and roots.

Consider the polynomial $f(x) = -5x + 3 - 2x^2$.

(1) Complete the square, so the polynomial looks like $a(x + h)^2 + k$ as follows:

    (a) Re-order the terms.

    (b) Factor out the leading coefficient.

    (c) Work out the constant term inside the bracket in the $(x - h)^2$ part.

    (d) Work out the constant term $+k$ outside the bracket.

(2) Can you factor the polynomial?

(3) Sketch the graph of the polynomial.