Even MORE Polynomials

1. Find k if $(x + 3)$ is a factor of $x^3 - 3x^2 + kx + 6$

2. Find p if $x^4 + 4x^3 + px^2 + 4x + 1$ has $(x + 1)$ as a factor. Hence factorize fully.

3. If $(x + 3)$ and $(x - 1)$ are factors of $f(x) = x^4 + 2x^3 - 7x^2 + ax + b$, find a and b and hence factorize fully.

4. If $(x + 2)$ is a factor of $x^3 + kx^2 - x - 2$, find k and hence factorize fully.

5. If $x = 3$ is a root of the equation $x^3 - 37x + k = 0$, find k and hence find all the other roots.

6. Given that $(x - 2)$ is a factor of $f(x) = 2x^3 + kx^2 + 7x + 6$, find k. Hence solve the equation $f(x) = 0$ with this value of k.

7. Find k if $2x^3 + x^2 + kx - 8$ is divisible by $(x + 2)$.

8. Find k if $x^3 + k x^2 - 6x + 8$ has a factor $(x - 4)$. Hence factorize the expression fully.