- Read pp. 51 - 58.
- Need to know: Thm 7.1 (statement), Thm 7.2 and 7.3 (statements and proofs), Proposition 7.1 (statement and proof)

Do the following problems:

1. Factor $x^7 - 1$ as a product of linear and/or quadratic polynomials with real coefficients.

2. Write down an equation in the form $a_4 x^4 + a_3 x^3 + a_2 x^2 + a_1 x + a_0 = 0$ with real coefficients, so that this equation has roots $x_1 = 1 - i$ and $x_2 = 1 + 3i$.

3. If the roots of the equation
$$x^3 - 3x + 1 = 0$$
are α, β, γ, find another cubic equation whose roots are

a) $\alpha^2, \beta^2,$ and γ^2.

b) $\frac{1}{\alpha}, \frac{1}{\beta}, \frac{1}{\gamma}$.