Part I Problems

Problem 1: Change to polar form:
a) $-1+i$
b) $\sqrt{3}-i$

Problem 2: Express $\frac{1-i}{1+i}$ in the form $a+bi$ via two methods: one using the Cartesian form throughout, and one changing numerator and denominator to polar form. Show the two answers agree.

Problem 3: Calculate each of the following two ways: first by using the binomial theorem and second by changing to polar form and using DeMoivre's formula:

a) $(1-i)^4$
b) $(1+i\sqrt{3})^3$

Problem 4: Express the 6 sixth roots of 1 in the form $a+bi$.

Problem 5: Solve the equation $x^4+16=0$

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