ACMAT117 Fall 2025
Professor Manguba-Glover
Section 4.4 Homework (HW 16) Name: _____

Show all work and simplify all answers before circling/boxing them. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

(1) Write a formula (in standard form $f(x) = ax^3 + bx^2 + cx + d$) of a degree 3 polynomial that has the following roots: $x = 1 - i, x = 3$

(2) Factor the polynomial completely (including complex factors): $x^2 + 25$

(3) Factor the polynomial completely (including complex factors): $x^4 + 4x^2$

(4) Factor the polynomial completely (including complex factors): $x^3 + 2x^2 + 16x + 32$

(5) Factor the polynomial completely (including complex factors): $x^4 + 2x^3 + x^2 + 8x - 12$ given that $x = -3$ is a root

(6) Solve the polynomial equation (including complex solutions): $x^3 + x = 0$

(7) Solve the polynomial equation (including complex solutions): $x^3 = 2x^2 - 7x + 14$

(8) Solve the polynomial equation (including complex solutions): $x^4 = x^3 - 4x^2$

(9) Solve the polynomial equation (including complex solutions): $3x^3 + 4x^2 + 6 = x$

(10) Solve the polynomial equation (including complex solutions): $2x^3 - x + 1 = 0$