

HOMWORK ASSIGNMENT #1

due in class on Friday, January 13

Student No: _____ Name (Print): _____

Note: All homework assignments are due in class one week after being assigned. They must be on standard $8\frac{1}{2} \times 11$ size paper and they must be stapled. Assignments which are not stapled will not be accepted. I will not bring a stapler to class. Please enter your student number and name (as it appears on the registrar's list) in the spaces above. SURNAME FIRST IN CAPITALS, and given name second. Please put your answers in the boxes (if provided), show any work in the spaces provided and submit these pages for your assignment.

1. Express the following complex numbers in the form $a + bi$.

(a) $(1 + i)^8$

(b) $(\sqrt{3} + i)^6$

(c) $\frac{1+i}{1-i} - \frac{1}{1+i}$.

2. Show that \mathbb{C} can not be ordered (see #30 on page 7).

3. Find all solutions of the following equations. Express your answers in the form $a + bi$.

(a) $z^2 + iz + 2 = 0$.

(b) $z^4 - 16 = 0$.

(c) $z^3 + 1 = 0$.

4. Show that $\frac{\pi}{4} = 4 \arctan(1/5) - \arctan(1/239)$. Hint: $(1 + i)(5 - i)^4$. This is question #11 on page 23.