

BONUS ASSIGNMENT - COMPLEX NUMBERS

Applied Math (201-943-DW S1)

DUE Date: FRIDAY December 10th 2010, 10:00am

Can replace your lowest quiz or assignment

Instructor: E. Richer

Question 1.

Perform the indicated operations, expressing all answers in simplest rectangular form.

(a) $(12 + 7j) + (-8 + 6j)$

(b) $(-4 - 2j) - \sqrt{-49}$

(c) $(-5 + 3j)(8 - 4j)$

(d) $j(3 - 2j) - (j^3)(5 + j)$

(e) $\frac{3 + \sqrt{-4}}{4 - j}$

(f) $\frac{2 + (j - 6)}{1 - 2j}$

(g) $\frac{(2 - j)(3 + 2j)}{4 - 3j}$

Question 2.

Give the polar and exponential form of each of the complex numbers.

(a) $4 + 3j$

(b) $-327 + 158j$

(c) $-4j$

Question 3.

Change each number to polar form and then perform the indicated operations. Express the final result in rectangular and polar forms.

(a) $(\sqrt{3} + j)^8(1 + j)^5$

(b) $\frac{(5 + 5j)^4}{(-1 - j)^6}$

Question 4.

Find all the roots of the given equations

(a) $x^3 - 1 = 0$

(b) $x^4 + j = 0$

(c) $x^5 - 32j = 0$