First name: _____ Last name: _____ Student ID: _____

Chapter 2 Complex numbers Homework

1. Simplify

1) $\sqrt{-25}\times\sqrt{125}$	2) $\sqrt{-28}\times 2\sqrt{-242}$
3) $2\sqrt{-98}\times 3\sqrt{-64}$	4) $\dfrac{\sqrt{-64}}{\sqrt{28}}$
5) $\dfrac{\sqrt{-9}}{\sqrt{-99}}$	6) $\dfrac{\sqrt{-104}}{\sqrt{26}}$

2. Simplify

1) (2+3i)+(4-5i)	2) 3i-(2-i)

3) 4+(3+3i)	4) (5+2i)-(2+5i)

3. Simplify

1) $(5+3i)\times(2+3i)$	2) $(2+3i)\times(3+2\sqrt{18}i)$
3) $(3+2\sqrt{72}i)\times(4-3\sqrt{24}i)$	4) $(3+i)\times(12+8\sqrt{8}i)$
5) $\frac{2i}{4-i}$	6) $\frac{2-\sqrt{12}i}{3+\sqrt{8}i}$
7) $\frac{1-\sqrt{8}i}{1+\sqrt{8}\,i^2}$	8) $\frac{3-i^3}{2+2\sqrt{28}\,i^2}$

9) $\frac{5i}{2+i^7}$	10) $\frac{4-i^3}{3+2i^7}$
11) $\frac{10-i}{i+4}$	12) $\frac{12+\sqrt{12}i}{5-\sqrt{18}i}$

4. Find the solutions for the following equations

1) $4x^2 + 3 = 0$	2) $2x^2 + 3x + 4 = 0$	3) $3x^2 + 4x + 6 = 0$

5. Extra questions:

1) Add and express in the form of a complex number a + bi.
(2 + 3i) + (-4 + 5i) - (9 - 3i) / 3

2) Multiply and express in the form of a complex number a + bi.
(-5 + 3i)(- 4 + 8i)

3) Divide and express in the form of a complex number a + bi.
(-1 - 2i) / (- 4 + 3i)

4) Find the complex conjugate to
a) 1 + 8i

b) - 3i

5) Express in the form of a complex number a + bi.
(-5 - i)(- 7 + 8i) / (2 - 4i)

6) Express in the form of a complex number a + bi.
- (7 - i)(- 4 - 2i)(2 - i)

7) Express in the form of a complex number a + bi.
i / (1 - i)

8) Solve for x and y where x and y are real numbers.
2y + xi = 4 + x - i

9) Find a and b, where a and b are real numbers so that
$a + bi = (2 - i)^2$

10) Graph z = 4 – 5i on complex plane. Find the modulus of z.