Mathematics 1275/D225 **Quiz #4**
Instructor: Suman Ganguli **Due: Wed April 3** **Name:** _____

Question:	1	2	Total
Points:	4	6	10
Score:			

1. (4 points) Solve the following quadratic equation using the square root property (i.e., solve for x). Simplify the square root that appears in the solutions.

$$(x-5)^2 = 18$$

Solution: By taking the square root of both sides and applying the square root property:

$$x - 5 = \pm\sqrt{18}$$

$$x = 5 \pm \sqrt{18} = 5 \pm 3\sqrt{2}$$

2. (6 points) Perform the indicated operations on complex numbers, and express the result in the form $a + bi$:

a.

$$(-2+3i)(5-7i) =$$

Solution:

$$(-2+3i)(5-7i) = -10 + 14i + 15i - 21i^2 = -10 + 29i + 21 = 11 + 29i$$

b. (Recall that for division of complex numbers, we use the complex conjugate of the denominator.)

$$\frac{1+3i}{2+4i}$$

Solution: We multiply both the numerator and denominator by the complex conjugate of the denominator (since this makes the new denominator a real number, and allows us to simplify into the form $a + bi$:

$$\frac{1+3i}{2+4i} = \frac{1+3i}{2+4i} \cdot \frac{2-4i}{2-4i} = \frac{2-4i+6i-12i^2}{4-8i+8i-16i^2} = \frac{14+2i}{20} = \frac{14}{20} + \frac{2}{20}i = \frac{7}{10} + \frac{1}{10}i$$