

Complex numbers & completing the square

This is a short assignment! Work through sample problems and other problems in the book covering anything you are unsure of.

1. Write in complex standard form $(a + bi)$:

a. $(2 + 3i) + (-1 + 2i)$

b. $i + 2i + 3i - 7$

c. $(2 + 3i)(-1 + 2i)$

2. Solve, showing all solutions (even if complex):

a. $x^2 = -16$

b. $5x^2 + 18 = 3$

c. $(t - 2)^2 = -16$

3. Rewrite as a square of a binomial:

a. $x^2 + 16x + 64$

b. $x^2 + x + \frac{1}{4}$

4. Solve by completing the square:

a. $y^2 + 2y = 9$

b. $x^2 - 12x = -28$

5. Solve by any method:

1. $9x^2 - 23 = 0$

2. $x^2 - 6x = 15$

6. Convert to vertex form by completing the square:

a. $y = x^2 - 6x + 11$

b. $y = x^2 + 7x - 1$