Handout 1: High Complex-ity Problems Answers

1. Simplify
$$-2 + 3i^3 - (4 + i^7)^2$$
.

$$-17 + 5i$$
.

2. Simplify
$$(2-3i)^3$$

$$-36 + 15i$$
.

3. Simplify
$$5 - 6i + 1 + 3i^2 - (3i^2 + 2i^3)^2$$
.

$$-2 - 18i$$
.

4. Solve by completing the square $2x^2 - 4x + 10 = 0$.

$$x = 1 + 2i$$
 and $x = 1 - 2i$.

5. Solve by completing the square $x^2 + 5x - 6 = 0$.

$$x = -6 \text{ and } x = 1.$$

6. Solve by completing the square
$$3x^2 + x - 2 = 0$$
.

$$x = \frac{2}{3}$$
 and $x = -1$.

7. Solve by completing the square
$$-4x^2 - 12x + 16 = 0$$
.

$$x = 1 \text{ and } x = -4.$$

8. Solve by completing the square
$$-x^2 - 3x + 7 = 0$$
.

$$x = -\frac{3+\sqrt{37}}{2}$$
 and $x = -\frac{3-\sqrt{37}}{2}$.

9. Solve by completing the square
$$x^2 + 6x + 6 = 0$$
.

$$x = -3 + \sqrt{3}$$
 and $x = -3 - \sqrt{3}$.

10. Solve by completing the square
$$x^2 + 2x - 7 = 0$$
.

$$x = -1 + 2\sqrt{2}$$
 and $x = -1 - 2\sqrt{2}$.

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