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 $x^2 + 5x - 6 = 0$.

   $x = -6$ 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 $-4x^2 - 12x + 16 = 0$.

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