Section 7.5: Complex Numbers and Solving Quadratic Equations with Complex Solutions

1. True or False: The roots and the x-intercepts of an equation are the same.
   (a) True, and I am very confident
   (b) True, but I am not very confident
   (c) False, but I am not very confident
   (d) False, and I am very confident

2. True or False: The real zeros and the x-intercepts of a polynomial equation are the same.
   (a) True, and I am very confident
   (b) True, but I am not very confident
   (c) False, but I am not very confident
   (d) False, and I am very confident

3. Evaluate: $-\sqrt{-100}$
   (a) $-10i$
   (b) -10
   (c) $10i$
   (d) 10

4. Evaluate: $\sqrt{-250}$
   (a) $5i$
   (b) $-5i\sqrt{10}$
   (c) $5i\sqrt{10}$
   (d) $-5\sqrt{10}$

5. Find $i^{27}$. 


6. Solve by the Square Root Method: \((2x - 6)^2 + 16 = 0\)

   (a) \(x = 5, 1\)
   (b) \(x = 5i, i\)
   (c) \(x = 3 + 2i, 3 - 2i\)
   (d) \(x = 3 + 4i, 3 - 4i\)

7. Simplify: \(\sqrt{-64} - \sqrt{16} + \sqrt{-4} =\)

   (a) \(14i\)
   (b) \(6i\)
   (c) \(-12 + 2i\)
   (d) \(-4 + 10i\)

8. Find \((3 + \sqrt{-9}) - (5 + \sqrt{-16}).\)

   (a) \(-2 - \sqrt{-7}\)
   (b) \(-2 + 7i\)
   (c) \(-2 - i\)
   (d) \(-2 + i\)

9. Find \((3 + \sqrt{-9})(5 + \sqrt{-16}).\)

   (a) \(27 - 27i\)
   (b) \(27 + 27i\)
   (c) \(3 - 27i\)
   (d) \(3 + 27i\)

10. Express in the form \(a + bi\), where \(a\) and \(b\) are real numbers:

    \[
    \frac{4 - i}{3 + 2i}
    \]
(a) $\frac{14}{13} - \frac{11}{13}i$
(b) $\frac{10}{13} - \frac{11}{13}i$
(c) $\frac{14}{5} - \frac{11}{5}i$
(d) $\frac{10}{5} - \frac{11}{5}i$