

## 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  $i^{27}$ .

- (a)  $i$
- (b)  $-1$
- (c)  $-i$
- (d)  $1$

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)  $\frac{10}{5} - \frac{11}{5}i$