Square Roots, Complex Numbers, & Quadratic Formula Review

1. Simplify: $\sqrt{64}$
   a. -8
   b. 8
   c. $\sqrt{8}$
   d. $-\sqrt{8}$

2. Simplify: $2\sqrt{44}$
   a. $2\sqrt{11}$
   b. $4\sqrt{11}$
   c. $8\sqrt{11}$
   d. $11\sqrt{2}$

3. Simplify: $\sqrt{5} + 6\sqrt{5}$
   a. $7\sqrt{5}$
   b. $6\sqrt{5}$
   c. $7\sqrt{10}$
   d. $5\sqrt{6}$

4. Simplify: $\sqrt{32x^3}$
   a. $x\sqrt{32x}$
   b. $4x\sqrt{2x}$
   c. $\sqrt{2x}$
   d. $4x\sqrt{8x}$

5. Simplify: $\sqrt{2}(1 + \sqrt{3})$
   a. $\sqrt{2} + \sqrt{6}$
   b. $\sqrt{2} + 2\sqrt{3}$
   c. $2 + \sqrt{5}$
   d. $\sqrt{15}$

6. Simplify: $4\sqrt{12} - \sqrt{27}$
   a. $4\sqrt{-30}$
   b. $3\sqrt{6}$
   c. $5\sqrt{3}$
   d. $9\sqrt{6}$

7. Simplify: $i\sqrt{+42}$
   a. $6i\sqrt{7}$
   b. $9i\sqrt{2}$
   c. $3\sqrt{2}$
   d. $i\sqrt{42}$

8. Simplify: $(1 - \sqrt{3})(1 + \sqrt{3})$
   a. -2
   b. $-1 + \sqrt{3}$
   c. $-1 - 2\sqrt{3}$
   d. $1 - \sqrt{6}$

9. Simplify: $7i - 9i$
   a. -2
   b. 2
   c. $-2i$
   d. $2i$

10. Simplify: $(5 + 3i) + (-3 - 6i)$
    a. $2 - 3i$
    b. 8
    c. $-2 - 18i$
    d. $-1 + 3i$

11. Simplify: $(2 + 3i)(-3 - 6i)$
    a. 12
    b. -24
    c. $12 - 21i$
    d. $-24 - 21i$

12. What is an equivalent form of i^{63}?
    a. i
    b. -1
    c. $-i$
    d. 1

13. What does $\sqrt{+4}$ equal?
    a. $2i$
    b. -2
    c. $i\sqrt{4}$
    d. $2\sqrt{-1}$

14. What is the real number in the expression: $5 + 2i$

a. 2
b. $2i$
c. 5
d. i

15. Solve the equation: $n^2 = 2n - 10$

$n^2 - 2n + 10 = 0$

$\frac{2 \pm \sqrt{(-2)^2 - 4(1)(10)}}{2(1)}$

$\frac{2 \pm \sqrt{-36}}{2}$ $\quad 1+3i \quad 1-3i$

$\frac{2 \pm i\sqrt{36}}{2} = \frac{2 \pm 6i}{2} = \frac{1 \pm 3i}{1}$ or

16. Solve the equation: $2n^2 - 6n - 6 = 2$

$2n^2 - 6n - 8$

$2(n^2 - 3n - 4)$

$2(n-4)(n+1)$

$-4 \mid -3$

$-4 \cdot 1 \mid -4+1$

$n - 4 \quad n = 4 \quad n = -1$

$n - 4$

	n^2	$-4n$
n		
$+1$	$1n$	-4

17. Solve the equation: $3x^2 - 11 = 8x$

$3x^2 - 8x - 11 = 0$

$\frac{8 \pm \sqrt{(-8)^2 - 4(3)(-11)}}{2(3)}$

$\frac{8 \pm \sqrt{196}}{6} = \frac{8 \pm 14}{6} =$

$\frac{8+14}{6} = \frac{22}{6}$ or 3.67 $\quad \frac{8-14}{6} = \frac{-6}{6} = -1$

18. Solve the equation: $x^2 - 6x + 7 = 0$

$x^2 - 6x + 7 = 0$

$\frac{6 \pm \sqrt{(-6)^2 - 4(1)(7)}}{2(1)}$

$\frac{6 \pm \sqrt{8}}{2}$

$\frac{6 \pm 2\sqrt{2}}{2} = \frac{3 \pm \sqrt{2}}{1} = 3 \pm \sqrt{2}$

or

$3+\sqrt{2} \quad 3-\sqrt{2}$