

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Unit 12 Test Review

I. Simplify the following using  $i$ . Remember standard form.

1.  $\sqrt{-50}$

2.  $\sqrt{-96}$

3.  $\sqrt{-704}$

4.  $\sqrt{-1025}$

5.  $\sqrt{-529} + 8$

6.  $\sqrt{-60} - 9$

7.  $15 + \sqrt{-98}$

8.  $\sqrt{-75} - 14$

II. Add or Subtract the following complex numbers.

9.  $6i + 4i$

10.  $i - 4i$

11.  $(-4 - i) + (7 - 5i)$

12.  $(4 + 2i) - (5i) + 7$

III. Multiply the following complex numbers.

13.  $-4i(4 - 6i)$

14.  $(2i)^2$

15.  $-i \cdot -3i$

16.  $(-2 + 4i)(7 + 2i)$

17.  $-6(4i)(5 + 2i)$

18.  $(-8 + 2i)(-1 - 6i)$

IV. Solve the following quadratic equations using square roots.

19.  $x^2 + 25 = 0$

Solution: \_\_\_\_\_

20.  $64x^2 = -49$

Solution: \_\_\_\_\_

21.  $2x^2 = -176$

Solution: \_\_\_\_\_

22.  $3x^2 + 78 = 0$

Solution: \_\_\_\_\_

V. Find the number and type of solutions for the following quadratic equations using the discriminant. Then, solve each equation using the quadratic formula.

23.  $8x^2 + 8x + 4 = 0$

$a = \underline{\quad} b = \underline{\quad} c = \underline{\quad}$

Number & Type of Solutions: \_\_\_\_\_

Solutions: \_\_\_\_\_

24.  $4x^2 + 6x - 40 = 0$

$a = \underline{\quad} b = \underline{\quad} c = \underline{\quad}$

Number & Type of Solutions: \_\_\_\_\_

Solutions: \_\_\_\_\_

25.  $3x^2 + 6x + 6 = 0$

$a = \underline{\hspace{1cm}} b = \underline{\hspace{1cm}} c = \underline{\hspace{1cm}}$

Number & Type of Solutions:                 

Solutions:                                 

## ANSWERS

$-4$        $2 \text{ Imaginary}$        $4i\sqrt{6}$

$20 + 46i$        $8i\sqrt{11}$        $-3$        $\pm 5i$

$5i\sqrt{41}$        $8 + 23i$        $\pm \frac{7}{8}i$        $-9 + 2i\sqrt{15}$

$15 + 7i\sqrt{2}$        $-14 + 5i\sqrt{3}$        $-3i$        $10i$        $\pm 2i\sqrt{22}$

$11 - 3i$        $3 - 6i$        $\pm i\sqrt{26}$        $48 - 120i$

$-22 + 24i$        $-24 - 16i$        $-\frac{1}{2} \pm \frac{1}{2}i$

$\frac{5}{2} \text{ \& } -4$        $-1 \pm i$        $2 \text{ Real}$

$5i\sqrt{2}$        $2 \text{ Imaginary}$