Name_____ Date_____

Honors Algebra 2 Imaginary Numbers Practice

Solve each equation.

1. $\frac{1}{2}x^2 = -28$

2. $3x^2 + 14 = -19$

Find the values of *x* and *y* that make each equation true.

3. $6x - 2i = (-2y)i + 10$

4. $-40i + 2x = (5y)i - 12$

5. $-8y + 14i = (7x)i - 2$

Find each complex conjugate.

9. $\sqrt{3i} - 25$

10. $-5i + \frac{12}{5}$

11. $-2 - 1.5i$

Find each absolute value.

12. $|-12 + 6i|$

13. $|-7 - 4i|$

14. $\left|\frac{1}{2} + \frac{1}{2}i\right|$

Add or subtract. Write the result in the form *a* + *bi*.

15. $(8 - i) - (-5 - 4i)$

16. $(2 - 11i) - (10 + 6i)$

17. $\left(\frac{1}{2} + \frac{3}{4}i\right) + \left(-\frac{1}{4} - \frac{5}{4}i\right)$

Multiply or divide. Write the result in the form $a + bi$.

18. $\dfrac{-3+7i}{1+8i}$

19. $(-4-9i)(8+2i)$

20. $\dfrac{5+i}{2-i}$

Simplify.

21. $i^{24} - i^{13} + i^{12}$

22. $-4i^{13}$

23. $6 - 4i^{18}$

24. In a circuit, the voltage, V, is given by the formula V □ IZ, where I is the current and Z is the impedance. Both the current and impedance are represented by complex numbers. Find the voltage if the current is 3 + 2i and the impedance is 4 - i.

Challenge Problems

Evaluate and simplify.

25. $\sqrt{-8} \cdot \sqrt{-128}$

26. $\sqrt{-3} \cdot \sqrt{-2} \cdot \sqrt{-6} \cdot \sqrt{-4}$

27. $\left(\sqrt{-5}\right)^2$

28. $\sqrt{-2} \cdot \sqrt{-90} \cdot \sqrt{-5}$

29. $\sqrt{-3} \cdot \sqrt{12}$

30. $\left(\sqrt{-2}\right)^5$