

Name _____
Honors Algebra II – Complex Number Practice

Date _____
Period _____

Express in terms of i

1. $\sqrt{-12}$

2. $-\sqrt{-288}$

3. $\sqrt{-\frac{289}{121}}$

4. $\sqrt{-\frac{1}{6}}$

Simplify the following expressions. Put each into $a+bi$ form.

5. $(9-6i)-(11-6i)$

6. $\left(\frac{1}{9}+\frac{3}{10}i\right)+\left(-\frac{3}{5}+\frac{3}{2}i\right)$

7. $52-[(16-3i)-(4+7i)]$

8. $\sqrt{6}(5-2\sqrt{6}i)+2\sqrt{6}(3+4\sqrt{6}i)$

9. $(7+8i)(-6-7i)$

10. $(2\sqrt{3}+5i)(2\sqrt{3}-5i)$

11. $\left(\frac{1}{2}-\frac{3}{2}i\right)^2$

12. $(1+\sqrt{2}i)^3$

13. $(i^3-i)(i+i^4)$

14. $(3i^5+2i^4+i^3-2)^2$

15. $\sqrt{-16}\sqrt{-81}$

16. $-\sqrt{-5}\sqrt{-10}$

17. $(9i^5)(-2i^2)$

18. $(-3i^9)(15i^{23})$

Divide the complex numbers. Answers should NOT have i in the denominator.

19. $\frac{28i}{-4i^3}$

20. $\frac{6+4i}{5i}$

21. $\frac{12+5i}{-1+2i}$

22. $\frac{9\sqrt{2}+2i}{2\sqrt{2}+i}$

23. $\frac{(3-2i)^{-2}}{(4+i)^{-1}}$

24. $\left(\frac{1+i}{1-i}\right)^3$

25. $\frac{7+3i}{2-i} \cdot \frac{6+i}{3-i}$

26. $\frac{5-2i}{1+i} - \frac{5+4i}{2+i}$

27. If $x = 2 - 3i$, evaluate and simplify $x^2 - 2x + 7$

28. If $x = 1 - i$, evaluate and simplify $2x^2 - x - 3$

In the following problems, find a and b such that the statement is true.

29. $(5a - b) + (2b + 4a)i = 36 + 26i$

30. $(2 + 3i)(a + bi) = 1$

31. $8^a + 27i = 2 + 9^b i$

32. $(a + b) + (ab)i = 6 + 5i$