

Algebra in-class worksheet TO BE HANDED IN AND GRADED!
Chapter 2.2: Complex Numbers

Name: _____

Date: _____

Copy down word-for-word the text's definition of *The Number i* (pp194)

Copy down word-for-word the text's definition of *Complex Numbers* (pp194)

Copy down word-for-word the text's definition of the *Conjugate of a Complex Number* (pp196)

Do the following exercises:

1-15 (odd)

27-39 (odd)

43-49 (odd)

57-65 (odd)

75, 83, 85 (challenge)

1. $(-5 + 3i) + (7 + 8i)$

2. $(-6 - 5i) + (9 + 2i)$

3. $(4 - 9i) + (1 - 3i)$

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

5. $(12 + 3i) + (-8 + 5i)$

6. $(-11 + 4i) + (6 + 8i)$

7. $(-1 - i) + (-3 - i)$

8. $(-5 - i) + (6 + 2i)$

9. $(3 + \sqrt{-16}) + (2 + \sqrt{-25})$

10. $(7 - \sqrt{-36}) + (2 + \sqrt{-9})$

11. $(10 + 7i) - (5 + 3i)$

12. $(-3 - 4i) - (8 - i)$

13. $(13 + 9i) - (8 + 2i)$

14. $(-7 + 12i) - (3 - 6i)$

15. $(6 - 4i) - (-5 + i)$

27. $(2 + 3i)(2 + 5i)$

28. $(3 - 5i)(8 - 2i)$

29. $(-4 + i)(3 - 2i)$

31. $(8 - 3i)(-2 - 5i)$

32. $(7 - 4i)(-3 - 3i)$

33. $(3 + \sqrt{-16})(2 + \sqrt{-25})$

34. $(7 - \sqrt{-16})(2 + \sqrt{-9})$

35. $(5 - 4i)(5 + 4i)$

36. $(5 + 9i)(5 - 9i)$

37. $(3 + 2i)(3 - 2i)$

38. $(8 + i)(8 - i)$

39. $(7 - 5i)(7 + 5i)$

$$43. (-2 + 7i)^2$$

$$45. (1 - 3i)^2$$

$$47. (-1 - i)^2$$

$$49. (3 + 4i)^2$$

$$57. \frac{5 - 3i}{4 + 3i}$$

$$59. \frac{2 + \sqrt{3}i}{5 - 4i}$$

$$61. \frac{1 + i}{(1 - i)^2}$$

$$63. \frac{4 - 2i}{1 + i} + \frac{2 - 5i}{1 + i}$$

$$65. i^{11}$$

75. Is the sum of two imaginary numbers always an imaginary number? Explain your answer.

83. The sum of two numbers that are conjugates of each other is always a real number.

85. The conjugate of a product is the product of the conjugates of the individual complex numbers.

Exercise Set 2.2

1. $2 + 11i$ 3. $5 - 12i$ 5. $4 + 8i$ 7. $-4 - 2i$
9. $5 + 9i$ 11. $5 + 4i$ 13. $5 + 7i$ 15. $11 - 5i$
17. $-1 + 5i$ 19. $2 - 12i$ 21. $35 + 14i$
23. $6 + 16i$ 25. $13 - i$ 27. $-11 + 16i$
29. $-10 + 11i$ 31. $-31 - 34i$ 33. $-14 + 23i$
35. 41 37. 13 39. 74 41. $12 + 16i$
43. $-45 - 28i$ 45. $-8 - 6i$ 47. $2i$ 49. $-7 + 24i$
51. $\frac{15}{146} + \frac{33}{146}i$ 53. $\frac{10}{13} - \frac{15}{13}i$ 55. $-\frac{14}{13} + \frac{5}{13}i$
57. $\frac{11}{25} - \frac{27}{25}i$ 59. $\frac{-4\sqrt{3} + 10}{41} + \frac{5\sqrt{3} + 8}{41}i$
61. $-\frac{1}{2} + \frac{1}{2}i$ 63. $-\frac{1}{2} - \frac{13}{2}i$ 65. $-i$ 67. $-i$
69. 1 71. i 73. 625 75. Discussion and Writing
77. [1.4] $y = -2x + 1$ 78. [1.6] All real numbers, or $(-\infty, \infty)$
79. [1.6] $(-\infty, -\frac{5}{3}) \cup (-\frac{5}{3}, \infty)$
80. [1.6] $x^2 - 3x - 1$ 81. [1.6] $\frac{8}{11}$
82. [1.6] $2x + h - 3$ 83. True 85. True 87. $a^2 + b^2$