Practice 5-6

Complex Numbers

Find the first three output values for each function. Use $z = 0$ for the first
input value.

1. $f(z) = z^2 + 2i$

2. $f(z) = z^2 + 1 + i$

Find the additive inverse of each of the following.

3. $2 + 3i$

4. $-4 + i$

5. $2i$

6. $-1 - i$

7. $-6i$

8. $5 - 2i$

9. $-2 + 3i$

10. 4

Find each absolute value.

11. $|-2i|$

12. $|5 + 12i|$

13. $|-1 - i|$

14. $|2 + i|$

15. $|4 + 3i|$

16. $|5 - 2i|$

17. $|3 - 2i|$

18. $|-2 + i|$

19. $|3 - 3i|$

20. $|3i|$

21. $|2i|$

22. $|4 + i|$

23. $|6 - 3i|$

24. $|-3 + i|$

25. $|4|$

Simplify each expression.

26. $\sqrt{40}$

27. $\sqrt{-88}$

28. $-\sqrt{-36}$

29. $(1 + 5i) + (1 - 5i)$

30. $(3 + 2i) - (3 + 2i)$

31. $4 - \sqrt{-25}$

32. $(2 + 6i) - (7 + 9i)$

33. $(1 + 5i)(1 - 5i)$

34. $(1 + 5i)(6 - 3i)$

35. $(5 - 6i)(6 - 2i)$

36. $(3 + 4i)(3 + 4i)$

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

38. $(2 + 2i)(2 - 2i)$

39. $(-3 - 2i)(1 - 3i)$

40. $(3 + 3i) - (4 - 3i)$

41. $\sqrt{-48}$

42. $\sqrt{-300}$

43. $\sqrt{-75}$

44. $\sqrt{-16} + 2$

45. $(4 - i)(4 - i)$

46. $(4 + 2i)(1 - 7i)$

47. $(1 + 3i)(1 - 7i)$

48. $(2 + 4i)(-3 - 2i)$

49. $(11 - 12i)(11 + 12i)$

50. $(2 + 3i) + (-4 + 5i)$

51. $(5 + 14i) - (10 - 2i)$

52. $(5 + 12i)(5 - 12i)$

53. $(3 + 4i)(1 - 2i)$

54. $(6 + 2i)(1 - 2i)$

55. $(5 - 13i)(5 - 13i)$

56. $\sqrt{-44}$

57. $-\sqrt{-63}$

58. $\sqrt{-8}$

59. $(2 + 3i)(4 + 5i)$

60. $(5 + 4i) - (-1 - 2i)$

61. $(1 + 2i)(-1 - 2i)$

62. $(-1 + 4i)(1 - 2i)$

63. $(6 + 2i) + (1 - 2i)$

64. $(3 + 2i)(3 + 2i)$

65. $(-2 + 3i) + (4 + 5i)$

66. $(5 + 4i)(1 + 2i)$

67. $(-1 - 5i)(-1 + 5i)$

Solve each equation.

68. $x^2 + 80 = 0$

69. $5x^2 + 500 = 0$

70. $2x^2 + 40 = 0$

71. $3x^2 + 36 = 0$

72. $3x^2 + 75 = 0$

73. $2x^2 + 144 = 0$

74. $4x^2 + 1600 = 0$

75. $4x^2 + 1 = 0$

76. $2x^2 + 10 = 0$

77. $4x^2 + 100 = 0$

78. $x^2 + 9 = 0$

79. $9x^2 + 90 = 0$