Name

6-9A Lesson Master

Questions on SPUR Objectives
See Student Edition pages 446–449 for objectives.

VOCABULARY

In 1 and 2, give a. the real part and b. the imaginary part of each complex number.

1. $6 - 8i$

   a. _____ b. _____

2. $\sqrt{3} + \pi i$

   a. _____ b. _____

In 3 and 4, write the complex conjugate of each number.

3. $9 - 24i$ _____

4. $m + ni$ _____

SKILLS Objective E

In 5–8, perform the indicated operations and write the result in *a* + *bi* form.

5. $(6 - i)(5 + 2i) =$ _____

6. $(4 + 3i)^2 =$ _____

7. $(2 + 6i)(2 - 6i) =$ _____

8. $\frac{1 + i}{2 + 6i} =$ _____

In 9–14, let $Z_1 = 3 + 5i$ and $Z_2 = 2 + i$. Perform the indicated operations and write the result in *a* + *bi* form.

9. $Z_1 + 3Z_2 =$ _____

10. $Z_2 - Z_1 =$ _____

11. $Z_1 Z_2 =$ _____

12. $Z_2(3 - Z_1) =$ _____

13. $(Z_1)^2 =$ _____

14. $\frac{Z_1}{Z_2} =$ _____

15. Evaluate $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$ and $\frac{-b - \sqrt{b^2 - 4ac}}{2a}$ when $a = 1$, $b = 8$, and $c = 17$.

    a. $\frac{-b + \sqrt{b^2 - 4ac}}{2a} =$ _____

    b. $\frac{-b - \sqrt{b^2 - 4ac}}{2a} =$ _____

16. Recall that in electrical engineering, the total impedance Z_T of a circuit made from two circuits connected in parallel is $Z_T = \frac{Z_1 Z_2}{Z_1 + Z_2}$ where Z_1 and Z_2 are the impedances of the individual circuits. Find the total impedance of a circuit with $Z_1 = -4 + i$ ohms and $Z_2 = 3 - 4i$ ohms.

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