

General Algebra II Worksheet #8 Unit 7 Selected Solutions

Find the indicated absolute values. (Simplify any square roots.)

$$\begin{aligned} 1. \quad |4 - 3i| &= \sqrt{(4)^2 + (-3)^2} \\ &= \sqrt{16 + 9} = \sqrt{25} = 5 \end{aligned}$$

Perform the indicated operations. If the answer is a complex number, then write it using a + bi form.

$$4. \quad (3 + 7i) + (2 - 5i) = 5 + 2i$$

$$\begin{aligned} 8. \quad (4 - 3i) - (6 + 2i) &= -2 - 5i \\ (4 - 3i) + (-6 - 2i) & \end{aligned}$$

$$\begin{aligned} 11. \quad (2i)(5i) &= -10 \\ 10i^2 &= (10)(-1) \end{aligned}$$

$$\begin{aligned} 12. \quad (2i)^3 &= -8i \\ (2i)^2 &= 4i^2 = -4 \\ (2i)^3 &= (-4)(2i) = -8i \end{aligned}$$

$$\begin{aligned} 14. \quad (3 - 5i)(4 + 2i) &= 22 - 14i \\ 12 + 6i - 20i - 10i^2 &= \\ 12 - 14i + 10 &= 22 - 14i \end{aligned}$$

$$\begin{aligned} 16. \quad (2 + 8i)^2 &= -60 + 32i \\ (2 + 8i)(2 + 8i) &= \\ 4 + 16i + 16i + 64i^2 &= \end{aligned}$$

$$20. \quad \frac{2 + 3i}{4i} = \frac{3}{4} - \frac{1}{2}i$$

$$22. \quad \frac{3 + i}{1 + 3i} = \frac{3}{5} - \frac{4}{5}i$$

$$\frac{i(2 + 3i)}{i(4i)} = \frac{2i + 3i^2}{4i^2} = \frac{-3 + 2i}{-4}$$

$$\frac{(3 + i)(1 - 3i)}{(1 + 3i)(1 - 3i)} = \frac{3 - 9i + i - 3i^2}{1 - 9i^2} = \frac{6 - 8i}{10}$$

Write the additive inverse of each of the following (a + bi form).

$$24. \quad 3 - 5i \quad -3 + 5i$$

Write the complex conjugate of each of the following (a + bi form).

$$26. \quad 5 - 3i \quad 5 + 3i$$

Write the multiplicative inverse of each of the following (a + bi form).

$$28. \quad 1 - 3i \quad \frac{1}{1 + 2i} = \frac{1}{10} + \frac{3}{10}i$$

$$\frac{1(1 + 3i)}{(1 - 3i)(1 + 3i)} = \frac{1 + 3i}{1 - 9i^2} = \frac{1 + 3i}{10}$$