General Algebra II Worksheet #9 Unit 7 Selected Solutions

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

1. $|2 + 4i| = \sqrt{(2)^2 + (4)^2}$

$= \sqrt{4 + 16} = \sqrt{20} = 2\sqrt{5}$

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

4. $(5 + 3i) + (4 - 7i) = 9 - 4i$

8. $(6 - 5i) - (7 + 3i) = -1 - 8i$

$(6 - 5i) + (-7 - 3i)$

11. $(5i)(7i) = -35$

$35i^2 = (35)(-1)$

12. $(-3i)^3 = 27i$

$(-3i)^2 = 9i^2 = -9$

$(-3i)^3 = (-9)(-3i) = 27i$

14. $(5 - 2i)(1 + 5i) = 15 + 23i$

$5 + 25i - 2i - 10i^2 =$

$5 + 23i + 10 = 15 + 23i$

16. $(3 - 2i)^2 = 5 - 12i$

$(3 - 2i)(3 - 2i) =$

$9 - 6i - 6i + 4i^2 =$

20. $\frac{5 - 3i}{2i} = \frac{-3}{2} - \frac{5}{2}i$

$\frac{i(5 - 3i)}{i(2i)} = \frac{5i - 3i^2}{2i^2} = \frac{3 + 5i}{-2}$

22. $\frac{2 - i}{3 - 2i} = \frac{8}{13} + \frac{1}{13}i$

$\frac{(2 - i)(3 + 2i)}{(3 - 2i)(3 + 2i)} = \frac{6 + 4i - 3i - 2i^2}{9 - 4i^2} = \frac{8 + i}{13}$

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

24. $2 + 3i$ $\quad -2 - 3i$

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

26. $1 + i$ $\quad 1 - i$

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

28. $1 + 2i$ $\quad \frac{1}{1 + 2i} = \frac{1}{5} - \frac{2}{5}i$

$\frac{1(1 - 2i)}{(1 + 2i)(1 - 2i)} = \frac{1 - 2i}{1 - 4i^2} = \frac{1 - 2i}{5}$