Advanced Algebra

Unit 0A Worksheet

Simplify the following radicals.

1. $\sqrt{-20}$ 2. $\sqrt{-169}$ 3. $\sqrt{-\frac{24}{9}}$ 4. $\sqrt{-\frac{72}{25}}$

Perform the following operations involving the imaginary unit i.

5. $(2+7i)+(3+9i)$ 6. $(5-i)+(10-3i)$ 7. $12+(16-7i)$

8. $(9-3i)-(4+7i)$ 9. $(17+3i)-(2-7i)$ 10. $10i-(9+6i)$

11. $3i-(6+7i)+(9-3i)$ 12. $8+(6-5i)-(3+2i)$

13. $(6+5i)(3-2i)$ 14. $(9+5i)(6-i)$ 15. $5i(7+2i)$

16. $-9i(8+7i)$ 17. $(8+i)^2$ 18. $(9-7i)^2$

Evaluate the following higher powers of *i*.

19. i^{201} 20. i^{318} 21. i^{579} 22. i^{96}

Rewrite the expression using rational exponent notation.

23. $\sqrt[4]{8}$ 24. $\left(\sqrt[3]{4}\right)^2$ 25. $\left(\sqrt[6]{-8}\right)^5$ 26. $\left(\sqrt[10]{-14}\right)^{17}$

Rewrite using radical notation.

27. $16^{\frac{1}{5}}$ 28. $22^{\frac{2}{7}}$ 29. $(-7)^{\frac{3}{11}}$ 30. $(-11)^{\frac{3}{7}}$

Divide the following imaginary numbers.

31. $\frac{8+9i}{7i}$ 32. $\frac{3-2i}{7+i}$ 33. $\frac{9-i}{8+3i}$ 34. $\frac{9+3i}{5-6i}$