

EXTRA PRACTICE — Exercises

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Unit VII – Relations of Rational Number Degree Part E – The Complex Numbers as a Mathematical System Lesson 3 – Multiplication

For each of the following, perform the indicated multiplication, simplifying your result and writing it in the standard form of a complex number.

1. $(4 - 7i)(3 + i)$

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

3. $(-\sqrt{3} + 2i)(-\sqrt{3} - 2i)$

4. $(\sqrt{5} - i\sqrt{3})(\sqrt{5} + i\sqrt{3})$

5. $(-1 + i\sqrt{5})^2$

6. $(4 - \sqrt{-2})(4 + \sqrt{-2})$

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

8. $(3 - 4i)^2$

9. $(\sqrt{7} - 4i)(\sqrt{7} + 4i)$

10. $(4 + \sqrt{-5})(4 - \sqrt{-5})$

11. $(-6 + 2i)(7 - i)$

12. $(3 + i\sqrt{6})(3 - i\sqrt{6})$

13. $\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i\right)^2$

14. $(-2 + i\sqrt{5})(-2 - i\sqrt{5})$

15. $(3i)(1 + i\sqrt{2})^{-1}$

16. $\left(\frac{-1}{2} + \frac{\sqrt{3}}{2}i\right)\left(\frac{-1}{2} - \frac{\sqrt{3}}{2}i\right)$

17. $\left(\frac{5 + \sqrt{3}}{2}\right)(5 + \sqrt{3})$

18. $\left(\frac{2 + i\sqrt{7}}{4}\right)\left(\frac{2 - i\sqrt{7}}{4}\right)$

19. $\left(\frac{-1}{2} + \frac{\sqrt{3}}{2}i\right)^2$

20. $(3 + i\sqrt{5})(4 - 3i\sqrt{5})$

EXTRA PRACTICE — Answer Key

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Unit VII – Relations of Rational Number Degree Part E – The Complex Numbers as a Mathematical System **Lesson 3 – Multiplication**

For each of the following, perform the indicated multiplication, simplifying your result and writing it in the standard form of a complex number.

1. $19 - 7i$

2. 18

3. 7

4. 8

5. $-4 - 2i\sqrt{5}$

6. 18

7. -20

8. $-7 - 24i$

9. 23

10. 21

11. $-40 + 20i$

12. -15

13. i

14. 9

15. $-3i - 3\sqrt{2}$

16. 1

17. $14 + 5\sqrt{3}$

18. $\frac{11}{16}$

19. $\frac{-1 - \sqrt{3}i}{2}$

20. $27 - 5\sqrt{5}i$