

Master E

Unit 2B Day 03 Homework on Reviewing Complex Numbers

1-14: Simplify each expression.

1. $\sqrt{-121}$

$11i$

2. $\sqrt{-169}$

$13i$

3. $\sqrt{-24}$

$\sqrt{-1} \sqrt{4} \sqrt{6}$
 $2i\sqrt{6}$

4. $\sqrt{-200}$

$\sqrt{-1} \sqrt{100} \sqrt{2}$
 $10i\sqrt{2}$

5. $\sqrt{-10} \cdot \sqrt{-2}$

$i\sqrt{10} \cdot i\sqrt{2}$
 $i^2 \sqrt{20} =$
 $-1\sqrt{4}\sqrt{5} = -2\sqrt{5}$

6. i^{11}

$(i^4)^3 = i^{12} = 1$
 $-i$

7. i^{25}

i
 $i^{24} = 1$

8. i^{113}

i
 $i^{112} = 1$

9. $(3i)(-7i)(2i)$

$-21i^2 \cdot 2i$
 $-21(-1) \cdot 2i$
 $42i$

10. $4i(-6i)^2$

$4i(36i^2)$
 $4 \cdot 36 \cdot i(-1)$
 $-144i$

11. $(10-7i) + (6+9i)$

$10-7i$
 $6+9i$
 $16+2i$

12. $(12+5i) - (9-2i)$

$12+5i$
 $-9+2i$
 $3+7i$

13. $(4-i)(6-6i)$

$24 + 6i^2 - 6i$
 $24 + 6(-1) - 24i$
 $18 - 30i$

14. $(1+2i)(1-2i)$

$1-4i^2$
 $1-4(-1)$
 5

15. $(3i^2)(-5i^3)$

$-15i^2 \cdot i^2 \cdot i$
 $-15(-1)(-1) \cdot i$
 $-15i$

16-21: Solve each quadratic equation.

16. $4x^2 + 4 = 0$

$4x^2 = -4$
 $x^2 = -1$
 $x = \pm i$

17. $3x^2 + 48 = 0$

$3x^2 = -48$
 $x^2 = -16$
 $x = \pm \sqrt{16}$
 $x = \pm 4i$

18. $2x^2 + 50 = 0$

$2x^2 = -50$
 $x^2 = -25$
 $x = \pm \sqrt{-25}$
 $x = \pm 5i$

19. $6x^2 + 108 = 0$

$6x^2 = -108$
 $x^2 = -18$
 $x = \pm \sqrt{-18} = \pm i\sqrt{9 \cdot 2}$
 $x = \pm 3i\sqrt{2}$

20. $8x^2 + 128 = 0$

$8x^2 = -128$
 $x^2 = -16$
 $x = \pm \sqrt{-16}$
 $x = \pm 4i$

21. $3(x-5)^2 + 15 = 0$

$3(x-5)^2 = -15$
 $(x-5)^2 = -5$
 $x-5 = \pm \sqrt{-5}$
 $x = 5 \pm i\sqrt{5}$