

Name _____ Date _____ Period _____

DIRECTIONS: For #1-4, simplify and write your answers in the provided blanks.

1. $(1 + \sqrt{7})(7 - 4\sqrt{7})$

2. $(\sqrt{17} + 1)^2$

$-21 + 3\sqrt{7}$

$18 + 2\sqrt{17}$

3. $(\sqrt{5} + 3\sqrt{7})(\sqrt{5} - 3\sqrt{7})$

4. $\frac{1}{1-\sqrt{2}}$

-58

$-1 - \sqrt{2}$

DIRECTIONS: For #5-7, solve. If an equation has no real solutions, write "no real solution."

5. $\sqrt{5x - 1} = 7$

6. $\sqrt{m + 4} + m = 2$

$x = 10$

$m = 0$ (must reject $m = 5$)

7. $x\sqrt{7} = 28$

$x = 4\sqrt{7}$

DIRECTIONS: For #8-13, simplify and write your answers in the provided blanks.

8. $\sqrt{-48}$

$4i\sqrt{3}$

9. $\sqrt{-5} \cdot \sqrt{-15}$

$-5\sqrt{3}$

10. $(i\sqrt{3})^2$

-3

11. $\frac{\sqrt{10}}{3i\sqrt{2}}$

$-\frac{i\sqrt{5}}{3}$

12. $\frac{\sqrt{72}}{\sqrt{-18}}$

$-2i$

13. $4\sqrt{-3} - \sqrt{-75}$

$-i\sqrt{3}$

DIRECTIONS: For #14-17, answer the questions in the provided blanks.

14. What is $\sqrt{-1}$?

i

15. What is the value of i^2 ?

-1

16. What is the conjugate of $4\sqrt{7} - 2$?

4\sqrt{7} + 2

17. What is the conjugate of $8 + 3i$?

8 - 3i

DIRECTIONS: For #18, solve.

18. $x^2 + 121 = 0$

x = \pm 11i

DIRECTIONS: For #19-24, simplify and write your answers in the provided blanks.

19. $(5 + 4i) + (2 - 9i)$

20. $(9 + 2i) - (2 - 8i)$

$7 - 5i$

$7 + 10i$

21. $(-5 + i)(2 + 3i)$

22. $(6 + i\sqrt{2})(6 - i\sqrt{2})$

$-13 - 13i$

38

23. $(9 - 6i)^2$

24. $\frac{10}{4+3i}$

$45 - 108i$

$\frac{8}{5} - \frac{6}{5}i$

DIRECTIONS: For #25, answer the question in its most simplified form.

25. What is the reciprocal of $5 - 3i$?

$\frac{5}{34} + \frac{3}{34}i$