Name _____ Date _____ Period _____

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

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

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

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

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

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

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

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

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_____

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

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

8. $\sqrt{-48}$

9. $\sqrt{-5} \quad \bullet \quad \sqrt{-15}$

_____

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

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

_____

_____

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

_____

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

_____

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

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

_____

15. What is the value of i^2 ?

_____

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

_____

17. What is the <u>conjugate</u> of $8 + 3i$?

_____

DIRECTIONS: For #18, solve.

18. $x^2 + 121 = 0$ _____

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

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

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

_____

_____

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

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

_____

_____

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

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

_____

_____

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

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