Name _____ Date _____ Period _____

<u>DIRECTIONS</u>: For #1-5, 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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5. $\frac{5\sqrt{7} - 2\sqrt{5}}{\sqrt{7} + \sqrt{5}}$

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<u>DIRECTIONS</u>: For #6-8, solve. If an equation has no real solutions, write "no real solution."

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

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

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

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DIRECTIONS: For #9-17, simplify and write your answers in the provided blanks.

9. i^{30}

10. $\sqrt{-48}$

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

_____   _____   _____

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

13. $\dfrac{\sqrt{10}}{3i\sqrt{2}}$

14. $\dfrac{\sqrt{72}}{\sqrt{-18}}$

_____   _____   _____

15. $4\sqrt{-3} - \sqrt{-75}$

16. $i\sqrt{32} \quad \bullet \quad \sqrt{-2}$

17. $\sqrt{-\dfrac{a}{2}} \quad \bullet \quad \sqrt{-\dfrac{18}{a}}$

_____   _____   _____

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

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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 $5 - 3i$?   _____