

Name: _____

Algebra 2 Summer Assignment

Due: 1st day of School

Section 1: Factoring Polynomials → Factor completely.

1. $x^2 + 7x + 12$	2. $x^2 - 9x + 20$
3. $2x^2 + 11x + 12$	4. $3x^2 - 18x$
5. $x^3 - 4x^2 - 12x$	6. $4x^2 - 25$
7. $x^2 - 16$	8. $5x^2 + 15x + 10$
9. $x^2 + 10x + 25$	10. $9x^2 - 24x + 16$

Section 2: Factoring Quadratics→Solve by factoring.

11. $x^2 + 5x + 6 = 0$

12. $x^2 - 8x + 15 = 0$

13. $2x^2 + 7x + 3 = 0$

14. $x^2 - 36 = 0$

15. $3x^2 - 12x = 0$

16. $x^2 + 2x - 15 = 0$

17. $4x^2 - 49 = 0$

18. $x^2 - x - 20 = 0$

19. $2x^2 + 17x = -21$

20. $5x^2 = x + 18$

Section 3: Exponent Rules → Simplify.

21. $x^3 \cdot x^5$	22. $\frac{y^9}{y^4}$
23. $(2a^3b^2)^2$	24. $(x^4y^2)^3$
25. x^0	26. $5x^{-2}$
27. $\frac{3m^2n^{-1}}{6m^{-1}n^2}$	28. $(2x^2y^3)(4xy^2)$
29. $\frac{a^5b^3}{a^2b^7}$	30. $(x^2y^{-3})^2$

Section 4: Simplifying Radicals and Operations with Radicals

31. $\sqrt{72}$	32. $\sqrt{98}$
33. $\sqrt{50x^2}$	34. $3\sqrt{8} + 2\sqrt{18}$
35. $5\sqrt{12} - \sqrt{27}$	36. Multiply: $(2\sqrt{3})(4\sqrt{6})$
37. Multiply: $(\sqrt{5} + 2)(\sqrt{5} - 2)$	38. Divide and Simplify: $\frac{\sqrt{48}}{\sqrt{3}}$
39. $2\sqrt{45} + 3\sqrt{20}$	40. $\sqrt{75} - 2\sqrt{12}$

Section 5: Domain and Range → Graph and Identify the Domain and Range.

41. $y = x^2 + 1$	42. $y = \sqrt{x - 4}$
43. $y = \frac{1}{x-2}$	44. $y = x - 3$
45. $f(x) = \sqrt{9 - x}$	46. $g(x) = \frac{1}{x^2 - 16}$
47. $y = -x^2 + 5$	48. $y = x^3$

Section 6: Find the equation of a line with given information.

49. $\text{slope } (m) = \frac{1}{2}$ and passes through $(3,1)$	50. $\text{slope } (m) = -1$ and passes through $(2,-4)$
51. passes through the points $(8,5)$ and $(6,-7)$	52. passes through the points $(3,0)$ and $(7,1)$
53. parallel to $y = \frac{7}{3}x + 3$ and passes through $(-3,-3)$	54. parallel to $y = -5x + 2$ and passes through $(-1,4)$

Section 7: Order of Operations

55. $3[4(3 + 2) - 8]$	56. $8 \div (5 - 1) \cdot (3 + 6) \cdot 3$
57. $40 \div 4 - (5 - 3)$	58. $3\{2[(8 - 3)^2 - 10]\}$

