Name: _____

Algebra 2 Unit 8 Study Guide

Simplify.

1. (29)(12)
2. -4 + -8
3. 16 - -13
4. 22 ÷ -11
5. $\dfrac{a^7b^4(a^{-9}b^6)^2c^{-6}}{a^8b^2c^{-3}}$
6. $\dfrac{5x^3y^{-8}z^{12}}{21x^{-9}y^4z^0} \cdot \dfrac{14x^{11}y^6z^{-5}}{x^2y^3z^{-1}}$

Evaluate.

7. $9 + \sqrt{3x + 5} = 11$
8. Solve the system of equations.
$$\begin{cases} 5x - 3y = 22 \\ x + 6y = -22 \end{cases}$$
9. Factor. $5x^2 + 8x - 4$
10. Factor. $4x^2 - 12x + 9$
11. Find the zeros. $f(x) = -x^2 + 7x + 4$
12. Determine the roots of the function. $f(x) = x^2 + 12x + 8$
13. Find the x-intercepts of the function. $f(x) = x^2 - 9x + 14$
14. Simplify. i^{339}
15. Use the binomial theorem to expand. $(5m + n)^3$
16. Determine the product. $(3h + 4)(5h^4 + 2h^2 - 6)$
17. Simplify. Assume the answer is a real number. $\sqrt[6]{64x^{24}y^{36}z^{60}}$
18. Simplify. $243^{\frac{2}{5}}$
19. Solve.
$$\frac{5}{x^2 + 4x - 77} = \frac{2}{x^2 + x - 99}$$
20. Subtract.
$$\frac{-3x^2 + 7x - 20}{2x - 7} - \frac{6x^2 - 5x}{2x - 7}$$
20b. (Extra Credit) For what value of x is the expression undefined?
21. Simplify. Assume all expressions are defined.
$$\frac{\frac{x+2}{7} + \frac{3}{x-1}}{\frac{x+2}{x-1}}$$
22. Simplify.
$$\frac{x^2 + 8x + 12}{x^2 - 3x - 10}$$
23. Identify the holes in the graph.
$$\frac{3x^2 + 5x - 4}{x + 9}$$
24. Divide.
$$\frac{x^2 + 3x + 2}{x^2 + 7x - 8} \div \frac{x^2 + 6x + 8}{x^2 + 3x - 4}$$
25. Add.
$$\frac{x + 4}{x - 3} + \frac{7x - 1}{(x^2 + 2x - 15)}$$

Extra Credit:
26. The number of phones and mp3 players varies inversely. If there can be 20 phones and 6 mp3 players, how many mp3 players would there need to be to have 60 phones?