Name _____

Precalculus Summer Assignment 2010

Simplify the following:

1. $x^2y(3x^3+4xy+y^2)$	2. $\sqrt{75}$ (no decimals!)
3. $\frac{w^3x^2}{wx^{-3}}$	4. $(\sqrt{5}+1)(\sqrt{5}-1)$
5. $\frac{4}{2-\sqrt{2}}$	6. $\frac{x^2+8x+15}{x^2+3x}$
7. $\frac{4}{1-3i}$	8. $(2-5i)(2+5i)$

Factor and solve these completely over the real numbers. Remember to look for greatest common factors first.

9. $x^2 - 4x - 5 = 0$	10. $2x^2 - 32 = 0$ (Look for GCF)
11. $x^4 + 6x^3 + 9x^2 = 0$ (look for GCF)	12. $x^3 + 2x^2 - 16x - 32 = 0$ (grouping)
13. $x^3 + 27 = 0$ (cubes!)	14. $x^4 - x^2 - 12 = 0$

Solve the following

15. $3x-7=4$	16. Solve for x in terms of a and b: $2ax+bx+7=11$
17. $\frac{3m-2}{5}=6m$	18. $1-4d>4-d$
19. $\begin{cases} 3x-y=4 \\ x+5y=-4 \end{cases}$ A system!	20. $x^2-10x+3=0$ (Use quadratic formula, no decimals!!!)

21. $\frac{4}{m}-3=\frac{2}{m}$	22. $x-\frac{8}{x}=\frac{17}{x}$ (2 solutions!!!)
23. $3\lvert x-4\rvert=9$	24. $4\lvert x-1\rvert>12$

Functions

Given $f(x)=3x^2$ and $g(x)=-2x+5$ find the following:

25. $f(-3)$	26. $-g(\frac{1}{2})$
27. $f(g(1))$	28. $g(g(-3))$

Famous Algebra/Geometry Word Problems

29. A freight train leaves a station travelling at 30 mph A passenger train leaves 1 hours later travelling at 50 mph. At what time will the passenger train overtake the freight train?

30. A plane takes 6 hours to fly from San Francisco to New York, and 5 hours to return back. The wind velocity is 50 miles per hour, from New York to San Francisco. What is the speed of the airplane?

31. John can paint a house in 12 hours. Bill can paint the same house in 10 hours. How long will it take them to paint the house if they work together?

32. Suresh drove to the shore at 50 miles per hour and returned at 40 miles per hour (he hit some traffic). If the shore is 100 miles away, what was the average speed of his roundtrip? (No, the answer is not 40 miles per hour)

33. Tina inherited $5000 when Aunt Edna passed away. She invested some of it at 5% interest and some of it at 10% interest. At the end of 1 year, she made $310 in interest. How much was invested at 5%?

34. A hexagon is inscribed in a circle of radius 10. Find the area between the circle and the hexagon.

35. A dress was marked up 30% (i.e. the price was raised 30%), the next week this price was discounted 30%. The final price of the dress was $47.32. What was the original price of the dress?

Graphing: For linear equations, put your answer in standard form, $Ax + By = C$

36. Find the equation of the line with a slope of 3 passing through (-2, 4).

37. Find the equation of the line passing through (2, 6) and (-3, 7).

38. Find the equation of a line perpendicular to $2x-5y=12$ passing through the point (1, -2).	39. Graph the parabola $y=x^2+4x+4$. Label the vertex and axis of symmetry.