Math 410 - Fall 2011- Final Exam Review Problems
Instructor: G. Faradineh

Name:_____

Instructions: The final exam will be a cumulative exam covering all of the material we have learned throughout the semester. The following problems are intended to give you some insight into the concepts that you should know. If you can master these concepts, you should do fine on the exam. In addition, I strongly encourage that you review your previous exams and quizzes.

For problems 1-6, simplify

1. $5(3u-4)+6(-2u+5)$
2. $(-3m^6n^5)(4m^2n^3)$
3. $\left(\frac{4a^3b}{d}\right)^3$
4. $\left(\frac{-42u^{13}v}{35uv^7}\right)^3$
5. $(3x-4y)^2$
6. $-(-4)^{-2}$
7. $\left(\frac{2}{5}\right)^{-2}$

For problems 8-11, factor

8. $x^3y^6+2x^3y^5-8x^3y^4$
9. $35+3x-2$
10. $100a^2-49b^4$
11. $10a^3+54b^3$

For 12-20, Simplify

12. $\frac{2x^2+5x-33}{4x^2-13x+3}$
13. $\frac{\frac{1}{y}+\frac{2}{y+3}}{\frac{5}{y+3}-\frac{4}{y}}$
14. $\sqrt{75a^2b^3c^4}$
15. $\sqrt[3]{-64x^9y^12}$
16. $\frac{\sqrt[3]{-27u^{11}}}{\sqrt[3]{8u^2}}$
17. $\frac{4-\sqrt{2}}{2+\sqrt{2}}$ (*Rationalize the denominator)
18. $\sqrt{6}-4\sqrt{24}+2\sqrt{54}$
19. $(\sqrt{10}+2\sqrt{3})^2$
20. $4^{(\frac{3}{2})}$
21. **Add:** $\frac{8}{6x-9}+\frac{x}{4x^2-9}$
22. **Multiply and Simplify:** $\frac{5p-20}{p^2-3p}\cdot\frac{p^2-p-6}{p^3-4p^2}$
23. **Divide:** $\frac{30v^4-18v^3+10v^2}{6v^3}$
24. **Divide:** $\frac{12x^3-8x^2+43x-7}{6x-1}$

On problems 25-26, graph on the x-y plane.

25. $y=\frac{3}{2}x-4$
26. $5y-2x=10$
27. Find the equation of the line passing through (8,3) and (-1,-3). Write the result in Slope-Intercept form.

For problems 28-35, solve

28. $\frac{5}{6}x-\frac{1}{3}=\frac{2}{3}x$
29. $0.4x-.05(x-6)=0.1x-2$
30. $\frac{6}{m-1}-\frac{4}{m+1}=\frac{5}{m^2-1}$
31. **Solve** Ax+By=C, **for y**
32. $7x+24\geq 6x+16$, **write the solution in interval notation.**
33. $2x^2+10x+7=0$

34. $x(4x - 25) = 21$

35. $\sqrt{5x - 9} = 9$

36. A car rental agency advertised renting a luxury, full-size car for \$29.95 per day and \$0.29 per mile. If you rent this car for 3 days, how many whole miles can you drive if you only have \$200.00 to spend? (**This problem was on exam 1**)

37. One leg of a right triangle is 4 cm and the hypotenuse is 8cm. Find the length of the remaining leg. (**Hint: Use Pythagorean's Throem**)

38. Joe bought some items and received \$3.00 in change, all nickels and quarters. How many of each are there? (**This problem was on exam 1**)

39. A hang glider pilot accidentally drops her compass from the top of a 400 ft. cliff. The height h of the compass after t seconds is given by the quadratic equation $h = -16t^2 + 400$. When will the compass hit the ground. (**Similar to problem 20 on exam 3**)

40. The equation $D = \frac{1}{2}n(n - 3)$ gives the number of diagonals D for a polygon with n sides. Find the number of sides for a polygon with 54 diagonals. (**This is a play on problem 16 from exam 3. Note on the solutions for the exam that I posted, I wrote the solution as 54 sides, please note the correction that it is 54 DIAGONALS**)