

# Review sheet for Final, Math 115

Dec 4th, 2006

The Final will cover Chapter 1 through Chapter 7.  
Review all the quizzes and tests!!

1. Know properties of negatives. (P.8)
2. Know how to find the product of polynomials, and the “special products”. (P.18)
3. Know how to factor a polynomial by “factoring the common factors”, “factoring by grouping” and “factoring quadratic polynomials”.
4. Know “Special factoring formulas”. (P. 29)
5. Know how to simplify the rational expressions. Know the relationship between multiplication and division. (P. 35)
6. Know how to find the least common denominator (LCD) and how to do summations and subtractions of rational expression.
7. Know properties and further properties of integer exponents. (P. 44 and P. 45)
8. Know the definition of principal  $n$ th root. (P. 53)
9. Know definition of rational number exponent. (P. 53)
10. Know definition of  $n$ th-root radical and properties of radicals. (P.58 P.60)
11. Know how to compute sums and differences of radicals.
12. Know how to rationalize denominator.
13. Know the properties of equality. (P. 75)
14. Know how to solve linear equation in one variable or a linear equation that is reducible to linear form.
15. Know how to solve a system of linear equations by substitution.
16. Know the inequality properties. (P. 103)

17. Know how to solve a linear inequality and double inequality. know how to express the answer with both inequalities notation and interval notation.
18. Know the definition of absolute value.
19. Know how to solve a equation or inequality with absolute value geometrically.
20. Know properties of equations and inequalities involving  $|x|$  and  $|ax + b|$ . (P. 114)
21. Know how to solve a quadratic equations, using factoring , completing square or quadratic formula.
22. Know how to solve a equation that is reducible to quadratic form.
23. Know the definition of symmetry. (P. 179)
24. Know how to find the distance between  $P_1(x_1, y_1)$  and  $P_2(x_2, y_2)$ . (P, 183)
25. Know how to find the standard equation of a circle. (P. 184)
26. If the equation of a circle is given, know how to find the radius and the center.
27. Know the geometric interpretation of slope. (P. 194)
28. Know how to find the equation of a straight line. “Slope–Intercept Form”, “Point– slope Form” and “Two–Points Form”. (P. 196, 197)
29. Know the relation of the slopes for two parallel lines and perpendicular lines.
30. Know the vertical line test for a function. (P. 212)
31. Know how to find the domain of a function and the range for some basic functions(linear, quadratic, exponential, logarithm and trigonometric functions).
32. Know how to sketch the graph of a quadratic function.
33. Know the definition of the operations of functions.
34. Know how to find the composition of two functions.

35. Know the graph transformations.(P.251, Vertical and Horizontal Transformation only)
36. Know how to do long division and synthetic division.
37. Know the remainder theorem. (P. 290)
38. All items on the review sheet for the Test #3.
39. Know how to simplify algebraic expression with basic identities.
40. Know how to use sum, difference identities. Then, find exact value of trigonometric functions of special sum or difference. E.g.  $15^\circ = \frac{\pi}{12}$ ,  
 $75^\circ = \frac{5\pi}{12}$ ,  $105^\circ = \frac{7\pi}{12}$
41. Know the cofunction identities.
42. Know the double-angle and half-angle identities.
43. Know how to decide the sign of the half-angle identities if  $x$  is in a given interval.
44. Know how to use the product-sum and sum-product identities.