Final Exam Objectives- with examples	Hints
 Exponent Rules: Review table p7 Properties of exponents (p10 #47-52). 	
Example: $\frac{x^{4}y^{3}}{x^{2}y^{5}}$	
Example: $\left(\frac{4a^{3}b}{a^{2}b^{3}}\right)\left(\frac{3b^{2}}{2a^{2}b^{4}}\right)$	
2 Find the standard form equation of a circle definition p15	
(p19#41-48)	
Example: Center (1,2), radius 5	
Example: Center (0,0), radius $\sqrt{3}$	
3. Find a point slope form equation for the line through the point with the given slope. Forms of equations of lines p30 (p36#11- 14). Example: Point (1,4) Slope m=2	
Example: Point (-3,4) Slope m=3	
1. Solve quedrotic inequality algobraically, potec pEE, (p. 50, 40, 14)	
Example: $2x^2 + 17x + 21 \le 0$	
Example: $21 + 4x - x^2 > 0$	
5. Find the domain of a function from the equation, notes p82 (p95#9-14)	

Example:
$$f(x) = x^2 + 4$$

Example: $f(x) = \sqrt{x^4 - 16x^2}$
6. Identify increasing and decreasing intervals of functions
(p95#29-34).
Example: $f(x) = |x+2| - 1$
Example: $f(x) = x^3 - x^2 - 2x$
7. Find the vertical and Horizontal asymptotes of a function notes
p3 (p95#55-62).
Example: $f(x) = \frac{x}{x-1}$
Example: $h(x) = \frac{2x-4}{x^2-4}$
8. Composition of functions p 111 (p117#15-19).
Example: $f(x) = 3x + 2$; $g(x) = x - 1$
Example: $f(x) = x^2$; $g(x) = \sqrt{1-x^2}$

9. Find the inverse of a function p123 (p126#13-16). Example: $f(x) = 3x - 6$	
Example: $f(x) = \frac{x+3}{x-2}$	
10. Transformations p136#9-12 Example: $y = -\sqrt{x}$	
Example: $y = \sqrt{3-x}$	
 Modeling with functions section 1.7 (p149#23,31,34). Example: Mark received a 3.5% salary increase. His salary after the raise was \$36,432. What was his salary before the raise? 	
Example: How much 10% solution and how much 45% solution should be mixed together to make 100 gallons of 25% solution?	
12. Find the vertex of a quadratic function from vertex form and standard form; then rewrite in vertex form (p165-166 example 5-6, p169#23-32)	
Example: $f(x) = -3x^2 + 6x - 5$	
Example: $g(x) = 2(x - \sqrt{3})^2 + 4$	
13.Modeling with Quadratics (p170#56, p171#61-62) Example: A large painting in the style of Rubens is 3 ft longer than it is wide. If the wooden frame is 12 in. wide, the area of the	

picture and frame is 208 ft^2 , find the dimensions of the painting.	
Example: As a promotion for the Houston Astros downtown ballpark, a competition is held to see who can throw a baseball the highest from the front row of the upper deck of seats, 83 ft above field level. The winner throws the ball with an initial vertical velocity of 92 ft/sec and it lands on the infield grass. (a) Find the maximum height of the baseball. (b) How much time is the ball in the air? (c) Determine its vertical velocity when it hits the ground.	
14. Finding zeros of polynomial functions by graphing and algebraically (p193#33-38, p194#43-48)	
Example: $f(x) = x^2 + 2x - 8$	
Example: $f(x) = 2x^5 - 11x^4 + 4x^3 + 47x^2 - 42x - 8$	
15. Synthetic division (p205#7-10), Remainder theorem (p205#13-18) and Factor theorem (p205#19-24).	
Example: Synthetic ÷; $f(x) = \frac{x^3-5x^2+3x-2}{x+1}$	
Example: Remainder Theorem; $f(x) = x^4 - 5$; $k = 1$	
Example: $x - 1$; $x^3 - x^2 + x - 1$	

16. Solving Rational Equations (p232#1-18). Example: $\frac{x-2}{3} + \frac{x+5}{3} = \frac{1}{3}$	
Example: $\frac{x+3}{x} - \frac{2}{x+3} = \frac{6}{x^2+3x}$	
Example: $\frac{4x}{x+4} + \frac{3}{x-1} = \frac{15}{x^2+3x-4}$	
17.Solving Rational Inequality (p243#33-38). Example: $\frac{x-1}{x^2-4} < 0$	
Example: $\frac{x^2 + 3x - 10}{x^2 - 6x + 9} < 0$	
18. Modeling with exponential functions (p271#7-18, 29-34) Example: Initial Value= 5, increasing at a rate of 17% per year	
Example: The 2000 population of Jacksonville, Florida, was 736,000 and was increasing at the rate of 1.49% each year. At that rate, when will the population be 1 million?	
19.Properties of log p289#1-22 Example: In8x	

Example:
$$\log \sqrt[4]{\frac{x}{y}}$$

Example: $4log(xy) - 3log(yz)$
20. Solving equations with log (p301#25-28)
Example: $logx^2 = 6$
Example: $lnx^6 = 12$
Example: $logx - \frac{1}{2}log(x+4) = 1$
Example: $ln(x+3) + ln(x+4) = 3ln2$

21.Interest problems, formulas p306 (p301#1-8, p311 #21-22,25,26) Example: $36(\frac{1}{3})^{x/5} = 4$ Example: If John invests \$2300 in a savings account with a 9% interest rate compounded quarterly, how long will it take until John's account has a balance of \$4150? Example: What interest rate compounded monthly is required for an \$8500 investment to triple in 5 years?



