

Math 99
Final Exam
June 12th, 2007

Name: _____

1. Your exam contains 9 questions and 8 pages; Please make sure you have a complete exam.
2. The entire exam is worth 150 points. Point values for problems vary and these are clearly indicated. You have 2 hours for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification.
4. If you need extra space, use an extra sheet attached to the back of the exam and clearly indicate this.
5. You are allowed one 8.5×11 sheet of handwritten notes (both sides).
6. Leave answers in exact form (as simplified as possible) or round to 4 decimal places.

Problem	Total Points	Score
1	15	
2	10	
3	15	
4	15	
5	15	
6	25	
7	20	
8	20	
9	15	
Total	150	

1. (15 pts.) Solve the following systems of linear equations.

(a) (7 pts.) $2x - 16 = 6y$
 $x = 3y + 8$

(b) (8 pts.) $6x + 2y = 6$
 $3x - 8y = -24$

2. (10 pts.) Find the distance between the points $(3\sqrt{5}, 3)$ and $(\sqrt{5}, 1)$. Simplify your answer as much as possible.

3. (15 pts.) Ernie invests \$3000, part of the amount into an account with 4% annual interest and the other into an account with 9% annual interest. At the end of one year, he has acquired \$200 in interest. How much is invested at each rate?

4. (15 pts.) Simplify the following.

(a) (5 pts.) $\sqrt[4]{16x^8y^{13}}$

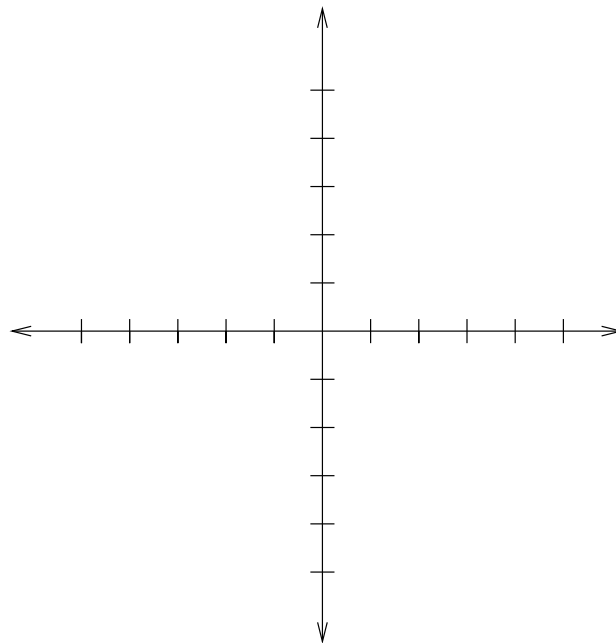
(b) (5 pts.) $\frac{2\sqrt{2}}{\sqrt{75}}$ (Rationalize the denominator and simplify.)

(c) (5 pts.) $r^{2/3}(5r^{4/3} - r^{-2/3} + 1)$

5. (15 pts.) The graph of the function $f(x) = 2x^2 + 4x - 1$ is a parabola.

(a) (7 pts.) What is the vertex of the graph of $f(x)$?

(b) (8 pts.) Graph $f(x)$ on the axis below. Plot at least 2 points in addition to the vertex.
State the domain and range.



6. (25 pts.) Solve the following equations and inequalities.

(a) (8 pts.) $|3t - 2| = 7$

(b) (9 pts.) $3\sqrt{4+x} - x = 0$

(c) (8 pts.) $6t + 3 < 3t + 12$ (Write your solution in interval notation.)

7. (20 pts.) Solve the following equations for the variable x .

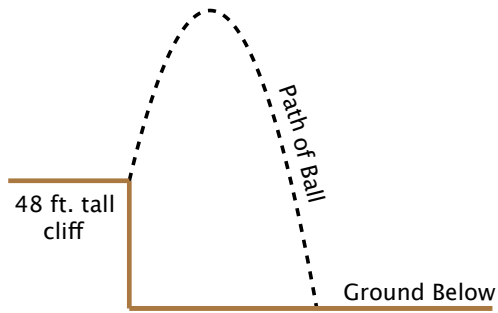
(a) (5 pts.) $5^x = 625$

(b) (5 pts.) $8^x = 4^{x+\frac{3}{2}}$

(c) (5 pts.) $\log_9 x = 3$

(d) (5 pts.) $\log_5 1 = x$

8. (20 pts.) Bert kicks a soccer ball up into the air with an initial velocity of 64 feet/second from the edge of a 48 foot cliff. The height of the ball above the ground below is given by $h = -16t^2 + 64t + 48$ in feet at t seconds.



(a) (10 pts.) When does the ball land?

(b) (10 pts.) When does the ball reach its maximum height? What is the maximum height?

9. (15 pts.) Graph the compound inequality $y > 2x - 1$ AND $3x + 2y \leq 4$. Be sure to clearly indicate the solution set.

