MA 152   Exam 3   Fall 1999

Name: _____

Student ID: _____

Instructor: _____

Class Hour: _____

INSTRUCTIONS:

(1) **There is no credit for guessing. You must show your work to receive credit!**

(2) Please fill in all the above information and write your name on the top of each of the 4 exam pages.

(3) The point value on each problem appears to the left of the problem.

(4) You must show sufficient work to justify all answers. Correct answers with inconsistent work may not be given credit.

(5) No partial credit will be given on problems 1-3. Partial credit may be obtained on problems 4-10 provided sufficient work is shown.

(6) Circle the letter of the correct answer in problems 1-3, and write the answers to problems 4-10 in the space provided.

(7) No books or paper are allowed. Calculators may be used where appropriate.

(8) The exam is self-explanatory. Please do not ask the instructor to interpret any of the exam questions.

Page	Points	Max Possible
1		24
2		20
3		32
4		24
Total		100

MA 152   Exam 3   Fall 1999

Name: _____

Circle your answer to problems 1-3. <u>You must show work to receive credit</u>

(8 pts.) 1. Let $f(x) = 2x^2 - 5x + 3$ and $g(x) = \dfrac{3}{x}$. Calculate $(g \circ f)(1)$.

    A. 1

    B. 3

    C. 0

    D. $\dfrac{1}{2}$

    E. Undefined

(8 pts.) 2. Rationalize the denominator: $\dfrac{4}{\sqrt{x} - 5}$

    A. $\dfrac{4(\sqrt{x} + 5)}{x + 25}$

    B. $\dfrac{4(\sqrt{x} + 5)}{x - 25}$

    C. $\dfrac{4(\sqrt{x} - 5)}{x - 25}$

    D. $\dfrac{4(\sqrt{x} - 5)}{x^2 + 25}$
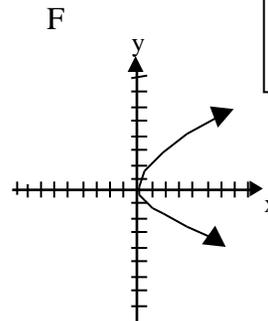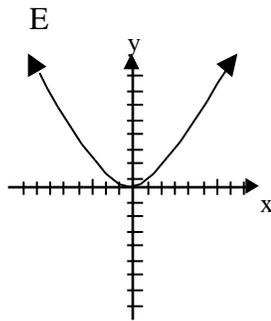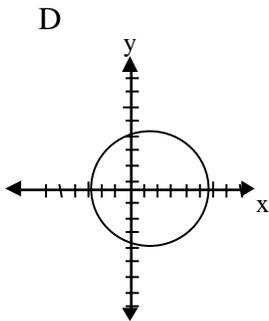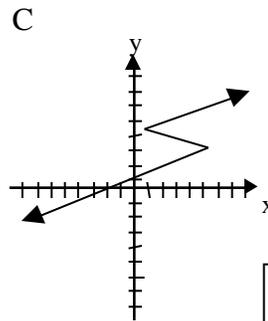
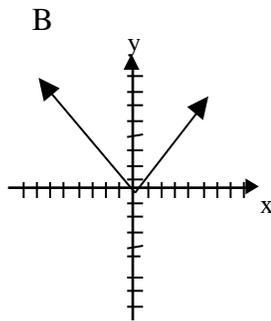   E. $\dfrac{4(\sqrt{x} + 5)}{x^2 - 25}$
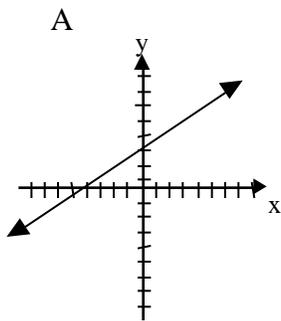
(8 pts.) 3. Find the inverse of the function $f(x) = 4x + 9$

    A. $f^{-1}(x) = \dfrac{x - 9}{4}$

    B. $f^{-1}(x) = 4x + 9$

    C. $f^{-1}(x) = \dfrac{4x + 9}{9}$

    D. $f^{-1}(x) = -4x - 9$

    E. $f^{-1}(x) = \dfrac{-4x - 9}{4}$

Name: _____

Place your answers in the spaces provide. <u>You must show work to receive credit</u>.

(8 pts.) 4. Which of the following graphs represent functions? Place the letters of the graphs that
represent functions in the box provided.

A

B

C

Functions:

D

E

F

(12 pts.)
        5. Simplify.

(6 pts.) a.

$$x^{\left(\frac{1}{2}\right)^3} \cdot x^{\left(\frac{3}{4}\right)^2} =$$

(6 pts.) b. $\sqrt{12} - 3\sqrt{27} + 4\sqrt{48} =$

Name: _____

Place your answers in the spaces provide. <u>You must show work to receive credit</u>.

(10 pts.)
6. Suppose V varies directly as the square of t and inversely as x.
V =100 when t = 5 and x = 10. Find the explicit formula for V in terms of t and x.

V=

(14 pts.)
7.
(8 pts.) a. Find the equation of the circle, in standard form $(x - h)^2 + (y - k)^2 = r^2$, that has $\overline{AB}$ as the endpoints of a diameter , where A = (3, 6) and B = (-5, 8).

(6 pts.) b. Find the coordinates of the vertex of the parabola with equation: $y = -2x^2 + 8x + 12$ $x = \dfrac{-b}{2a}$.

(8 pts.) 8. Rewrite without absolute value signs: $|2x + 3|$ 5.
Use set notation, $\{ x |$ $\}$, for your answer.

Name: _____

Place your answers in the spaces provide. <u>You must show work to receive credit</u>.
(12 pts.)
     9. River City's present population of 5,000 is expected to grow exponentially over the next 12 years at 5 percent per year. How many people, rounded to the nearest whole person, will it have at the end of that period ($A(t) = A(0)[1 + r]^t$).

Population in 12 years =

(12 pts.)
     10.The Zebra Company sells toy zebras for $25 a piece.   The material and labor to make a zebra is $13 and the company has fixed yearly costs of $15,000.

(8 pts.) a) Write an expression, in simplest form, for the company's profit P in a year in which it makes and sells x zebras.

P(x) =

(4 pts.) b) What is the profit in a year in which the company makes and sells 12,000 zebras?

Profit =

4