

MAC 1147 TEST IA
FALL 2010

FILE COPY

A. Sign your scantron sheet in the white area on the back in ink.

B. Write and code in the spaces indicated:

- 1) Name (last name, first initial, middle initial)
- 2) UF ID number
- 3) Discussion section number

C. Under "special codes" code in the test ID numbers 1, 1.

- 2 3 4 5 6 7 8 9 0
- 2 3 4 5 6 7 8 9 0

D. At the top right of your answer sheet, for "Test Form Code" encode A.

- B C D E

E. While taking the test, please keep your answer sheet covered or turned over at all times.

F. This test consists of 6 three-point multiple choice questions, 8 five-point multiple choice questions and four pages of partial credit questions worth 25 points. The time allowed is 90 minutes.

G. WHEN YOU ARE FINISHED:

- 1) Before turning in your test check for transcribing errors. Any mistakes you leave in are there to stay.
- 2) You must turn in your scantron and tear off sheets to your discussion leader. Be prepared to show your picture I.D. with a legible signature.
- 3) The answers will be posted after the exam on the web www.math.ufl.edu/~huang/MAC1147.html.

NOTE: Be sure to bubble the answers to questions 1–14 on your scantron.

Part I: 3 points each

1. Which of the following does not represent y as a function of x ?

- a. $y = -2$ b. $y = x$ c. $x^2 + y^2 = 1$ d. $xy = 1$
-

2. Which of the following graphs is symmetric with respect to the origin?

- a. $y = \sqrt{x}$ b. $xy = 1$ c. $y = x^4$ d. $y = x^2 + |x|$
-

3. Find the solution set of the equation $5x = 3x^2$.

- a. \emptyset b. $\{0\}$ c. $\left\{\frac{5}{3}\right\}$ d. $\left\{0, \frac{5}{3}\right\}$
-

4. $x - \sqrt{\sqrt[3]{x^6}} =$

- a. 0 b. $2x$ c. $x - \sqrt[5]{x^6}$ d. $x - |x|$
-

5. Find the domain of the expression $\sqrt{-5 - |3x + 1|}$.

- a. \emptyset b. $\left[-2, \frac{4}{3}\right]$ c. $(-\infty, -2] \cup \left[\frac{4}{3}, \infty\right)$ d. $(-\infty, \infty)$
-

6. (BONUS!) Order a , b , and c if

$$a = \frac{|4x^2 + 2|}{2x^2 + 1}$$

$$b = -2^2$$

$$c = \text{the degree of the polynomial } x^2 + 2x^4 - 1$$

- a. $a < b = c$ b. $b < a = c$ c. $b < a < c$ d. $a < c < b$

Part II: 5 points each

7. Which of the following is/are correct?

P. $\frac{2}{x} + \frac{5}{y} = \frac{7}{x+y}$

Q. $\frac{3+y^{-1}}{x} = \frac{3}{xy}$

R. $\sqrt{x^2 + y^2} = |x| + |y|$

a. P and Q only

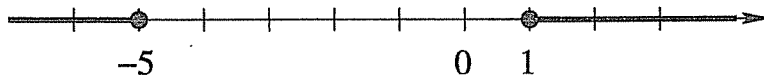
b. P and R only

c. R only

d. Q and R only

e. none

8. Use the absolute value notation to present the interval below.



a. $|x - 3| \geq 2$

b. $|x + 3| \geq 2$

c. $|x| \geq 6$

d. $|x - 2| \geq 3$

e. $|x + 2| \geq 3$

9. Evaluate: $811 \times 0.235 - 236 \times 0.46 + 1189 \times 0.235 - 764 \times 0.46 =$

a. 0

b. 10

c. 189

d. -225

e. 712.88

10. If $x > 0$, simplify $\frac{1}{\sqrt{x}\sqrt{x}}$.

a. $\frac{\sqrt[4]{x}}{x}$

b. $\frac{\sqrt{x}}{x}$

c. $\frac{1}{x}$

d. $\frac{\sqrt{x}}{2x}$

e. $\frac{1}{4}$

11. The manager of a toy factory finds that it costs \$4,800 to produce 1000 toys in one day and \$6,800 to produce 1500 toys in one day. Assume that x is the number of toys manufactured in one day and y is the daily cost, and their relation is linear. Find the daily fixed cost and the total cost to produce 500 toys in one day.

- a. \$600; \$2,000 b. \$800; \$2,400 c. \$800; \$2,800
d. \$1,000; \$2,400 e. \$1,000; \$2,800
-

12. Find the zeros of the function $f(x) = (x^2 - 3)^{2/3} + (x^2 - 3)^{1/3} - 2$.

- a. f has no zeros b. $x = -2, 1$ c. $x = 2, \sqrt{5}$
d. $x = \pm 2$ e. $x = \pm 2, \pm \sqrt{5}$
-

13. Perform the operations and simplify:

$$\frac{x^3 - y^3}{x + y} \div \frac{1}{x^{-1} - y^{-1}} =$$

- a. $\frac{-xy(x^2 - xy + y^2)}{x + y}$ b. $\frac{-xy(x^2 + xy + y^2)}{x + y}$ c. $\frac{x^2 - xy + y^2}{x + y}$
d. $\frac{x^2 + xy + y^2}{x + y}$ e. $(x^2 + y^2)(x - y)$
-

14. Which lines below has the largest slope?

- a. The line with equation $3x + 4y + 1 = 0$
b. The line with equation $y = 2x + 5$.
c. The line is perpendicular to the line $y = \frac{1}{3}x - 1$.
d. The line passes through the point $(0, 5)$ and is parallel to the x -axis.
e. The line passes through points $(1, -1)$ and $(-1, -7)$.

MAC 1147 TEST IA PART II
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Sect # _____ Name _____

UF ID _____ Signature _____

SHOW ALL WORK TO RECEIVE FULL CREDIT.

1. If $f(x) = \frac{1}{x^2}$, find and simplify the difference quotient

$$\frac{f(2+h) - f(2)}{h}, h \neq 0.$$

2. Given the center $(1, -2)$ of the circle.

a) Find x and y if one diameter of the circle has endpoints $(3, 1)$ and (x, y) .

$x = \underline{\hspace{2cm}}$; $y = \underline{\hspace{2cm}}$

b) Find the radius.

radius: $\underline{\hspace{2cm}}$

c) Find the general form of the circle.

3. Find all real solutions.

a) $2x = 1 - \sqrt{2 - x}$

$x =$ _____

b) $\frac{1}{x-1} - \frac{2}{x^2-1} = -\frac{1}{2}$

$x =$ _____

4. Given the quadratic equation $4x^2 - 4x - 5 = 0$.

a) Solve the equation by completing the square.

$$x = \underline{\hspace{2cm}}$$

b) Solve the equation using the quadratic formula.

$$x = \underline{\hspace{2cm}}$$