A. Sign your bubble sheet on the back at the bottom <u>in ink</u>.

B. In pencil, write and encode in the spaces indicated:

    1) Name (last name, first initial, middle initial)

    2) UF ID number

    3) 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. 1) This exam consists of 10 multiple choice questions, each worth 4 points, plus one page (front and back) of 3 free response questions worth 10 points total. The total number of questions on this exam is 13. The test is counted out of 50 points.

    2) The time allowed is 90 minutes.

    3) You may write on the exam.

    4) Raise your hand if you need more scratch paper or if you have a problem with your exam. DO NOT LEAVE YOUR SEAT UNLESS YOU ARE FINISHED WITH THE EXAM.

F. KEEP YOUR BUBBLE SHEET COVERED AT ALL TIMES.

G. When you are finished:

    1) Before turning in your exam **check carefully for transcribing errors**. Any mistakes you leave in are there to stay. If you encode the information from parts B-D incorrectly, you will lose 2 points from your total exam score.

    2) You must turn in your <u>bubble sheet</u> and <u>free response sheet</u> to your discussion leader or exam proctor. Be prepared to show your picture <u>I.D. with a legible signature</u>.

    3) The answers will be posted in Canvas within one day after the exam. Your discussion leader will return your free response sheet with your score in discussion. Your score will also be posted in canvas within one week of the exam.

NOTE: Be sure to bubble the answers to questions 1−10 on your bubble sheet.

1. Perform the operation: $\dfrac{x^2 - 5x + 6}{x^2 + 25} \div \dfrac{-x^2 + 5x - 6}{x + 5}$

a. $\dfrac{-x + 5}{x^2 + 25}$
b. $\dfrac{1}{x - 5}$
c. $\dfrac{-x - 5}{x^2 + 25}$
d. $-\dfrac{1}{x - 5}$

---

2. Let $A = \{-6, -\frac{12}{4}, -\frac{5}{8}, \sqrt{-9}, 0, \frac{1}{4}, 1, 0.3737373737...., \sqrt{16}\}$. Identify the elements in set A that belong to the set of irrational numbers.

a. $\{0.3737373737....\}$
b. $\{\sqrt{-9}, 0.3737373737....\}$
c. $\{\sqrt{-9}, 0.3737373737...., \sqrt{16}\}$
d. $\{\sqrt{-9}\}$
e. There are no irrational numbers in set A

---

3. Evaluate: $-2^2 - (-3)^0 - |3 - 7| + \frac{1}{4}[3 - (-6)]^{1/2}$

a. $-\dfrac{29}{4}$
b. $-\dfrac{1}{4}$
c. $\dfrac{7}{4}$
d. $\dfrac{1}{4}$
e. $-\dfrac{33}{4}$

---

4. Factor the expression **completely**: $x^3y^2 - 9x^3 - 8y^2 + 72$

a. $(x^3 - 8)(y^2 - 9)$
b. $(x^3 - 8)(y - 3)(y + 3)$
c. $(x - 2)(x^2 - 2x + 4)(y - 3)(y + 3)$
d. $(x - 2)(x^2 + 2x + 4)(y - 3)(y + 3)$
e. This expression is prime

---

5. If 7 liters of a 4% iodine solution must be mixed with a 10% solution to get a solution that is 6% iodine, how many liters of the 10% solution are needed?

a. 2.5 L
b. 3.5 L
c. 7 L
d. 4.5 L

2A

6. Solve the equation: $-7x - 2 - 3(x + 1) = -(5x - 2)$

a. -1 b. $-\dfrac{7}{5}$ c. $-\dfrac{3}{5}$ d. $-\dfrac{3}{7}$ e. -2

---

7. Simplify the power of i: i^{45} .

a. 1 b. -1 c. i d. $-i$ e. Cannot be simplified

---

8. Solve for C: $F = \dfrac{9}{5}C + 32$.

a. $C = \dfrac{9}{5}(F - 32)$ b. $C = \dfrac{5}{F - 32}$ c. $C = \dfrac{F - 32}{9}$

d. $C = \dfrac{5}{9}(F - 32)$ e. $C = \dfrac{9}{5}F + 32$

---

9. Simplify the expression: $\dfrac{\dfrac{1}{x + 1} - \dfrac{1}{x}}{\dfrac{1}{x}}$

a. $\dfrac{-1}{x + 1}$ b. $\dfrac{1}{x + 1}$ c. $\dfrac{x}{x + 1}$ d. $\dfrac{-x}{x + 1}$ e. $\dfrac{1}{x(x + 1)}$

---

10. Suppose a right triangle has a side length that is one less than the other and a hypotenuse of length $\sqrt{5}$ in. Find the length of the **shortest side**.

a. 2 in.   b. 1 in.   c. 3 in.   d. 4 in.
e. Not enough information to solve

There is no question on this page.

MAC 1105 Exam 1A, Part II Free Response

Name: _____ UF ID #: _____

Signature: _____ Section #: _____

CLEARLY SHOW ALL WORK TO RECEIVE FULL CREDIT

1. (4 points) Simplify the expression **completely**. Your final answer should have only positive exponents or radicals. Be sure to rationalize the denominator if necessary. You may assume that all varibles represent positive numbers:

$$\left(\frac{b^2}{25^4 a^8}\right)^{-\frac{1}{8}} \sqrt[4]{\frac{4^2 b^{-5}}{a^2}}$$

Answer: _____

5A

2. (3 points) Solve using the method of **completing the square**: $x^2 - 7x + 12 = 0$

$$x = \underline{\hspace{4cm}}$$

3. (3 points) Find the quotient and remainder using **synthetic division**, if there is no remainder write none:

$$\frac{2x^5 - 10x^3 - 19x^2 - 50}{x - 3}$$

Quotient: $\underline{\hspace{6cm}}$, Remainder: $\underline{\hspace{2cm}}$

6A