

**MATHEMATICS 101    FIRST EXAM    February 13, 2007**

Name: \_\_\_\_\_

Instructor and section:\_\_\_\_\_

1. No calculators are allowed.
2. No notes or books are allowed.
3. Show your work and make your methods clear. Unjustified answers will receive no credit, except for true/false questions.

problem	worth	your score
1	20	
2	10	
3	15	
4	30	
5	25	
TOTAL	100	

1. (a) (15 points) Are the followings true (T) or false (F) ?

i.  $-13 < -13.98$

ii.  $|-5^{16}| = |(-5)^{16}|$

iii.  $|4 - 12| = |4| - |12|$

iv. If  $x < 5$  then  $-5x < -25$

v.  $\frac{3x - y}{3} = x - y$

(b) (5 points) Order the following numbers on the number line:

$$-2^4, \quad (-2)^4, \quad -|(-7)|, \quad -2, \quad -2.1$$

2. (10 points) Simplify the following expression:

$$\frac{3(2A - \frac{1}{3}) - \frac{1}{2}A6 - 2^2}{-|3 - 5| + 3(-1)^{13}}$$

3. (a) (10 points) If one third of a number is subtracted from 12, the result is twice the number. Write down the equation modeling the verbal sentence and then find the number.

- (b) (5 points) Solve the following formula for  $A$ :

$$2AB - CD = AD + BC$$

4. Find the solution sets of the following compound inequalities in interval form:

(a) (15 points)

$$4 \leq 3 - 2x < 8 \quad \text{AND} \quad -2 + 3x \geq x - 5$$

(b) (15 points)

$$2\left(\frac{y}{2} - 5\right) > y - 4 \quad \text{OR} \quad 105 + 2y \leq -3y + 70$$

5. Find the solution sets of the following inequalities in interval form:

(a) (10 points)

$$|-2x + 1| - 7 > 0$$

(b) (15 points)

$$|2k + 2| < 7 \quad \text{AND} \quad |k + 6| - 3 < -5$$