**MATH 100 TEST I 25 September 2015**

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

**Part I**

***Instructions:*** [*6 pts each*] Answer any 11 of the following 13 questions. (You may answer *more than* 11 to earn extra credit.) *For each problem be certain to show your work****!*** *You may use your calculator, but you still must show your reasoning!*

1. Compute the value of (b + 99a + 2015)0 + (a + 2b)2 – (b – 2a)99 when b = 2 and a = 1. *Simplify* your answer fully.

2. Compute the value of 7(1 + x2)3 when x = -3.

3. If *p* snow plows clear *q* streets in *d* days, *how many days* does it take for one snow plow to clear one street?



4. Multiply (a + b + c) by (a – b – c) and simplify if possible

5. Solve for *x*:     (3x + 1)(2x + 1) = (x +3 )(6x + 3) – 14

6. Convert the following quotient to *scientific notation:*

169,000,000 / 0.00000013

7. If pumpkins sell at 5 for $16 dollars and Halloween candy sells at 17 bags for $10, *how much will it cost* to buy *x* pumpkins and *y* bags of candy?

 

8. Subtract x4 – 8x3 + 2x2 – 3x + 1 from x4 + 11x3 – x2 + 4x – 4 and simplify your result.

9. Simplify fully: (a4b6c)3 (a2b3c5)2(abc)

10. Find the *Greatest Common Divisor* of the expression

99a5b6c7 – 88a4b7c6 + 110a8b5c6

(You need not factor theoriginal expression.)

11. Multiply x + 2 by x2 – 2x + 4. *Simplify* your answer.

12. Albertine purchases a bicycle from the great REI sale for $199. The bike’s price had been reduced by 17 %. What was the list price of the bike? (Disregard tax.)

13. Solve for *t*: 2{3 + 4(5 – 6t)} = -170

**Part II**

***Instructions:*** [*10 pts each*] Choose *any three* of the following five problems. You *may answer more than three* to earn extra credit. *Show your work!*

1. Solve for *x*: 3(5 – 6x) – 5[x – 5{1 – 3(x – 5)}] = 23

2. The sum of four *consecutive odd* integers is 8072. Find the *smallest* number.

1. Ebenezer spent $112.80 in buying geese and ducks. If each goose cost 14 *dimes* and each duck 6 *dimes*, and if the total number of birds bought was 108, how many of each did he buy? (Guessing will receive very little credit, if any.)

 Hint: Let x = number of geese purchased by Ebenzer. Then express the number of ducks purchased in terms of x.

 

4. The sum of the ages of Archy and Mehitabel is 87 years; nine years hence Archy will be four times as old as Mehitabel. Find their present ages.

 *Hint: Let x = age of Archy now*

5. Vladimir and Estragon are waiting for the arrival of an acquaintance. While waiting, they find employment as trash collectors on a local highway. Working alone, Vladimir can collect trash from two miles of highway in 30 hours. If Vladimir and Estragon work together, they can clean the two miles of highway in only 10 hours. *How many hours* would it take for Estragon, *working alone*, to collect trash on the two miles of highway?  *(You must show your work!)*

**

*There is something I don't know*

 *that I am supposed to know.*

*I don't know what it is I don't know,*

 *and yet am supposed to know,*

*and I feel I look stupid*

 *if I seem both not to know it*

 *and not know what it is I don't know.*

*Therefore I pretend I know it.*

 - R. D. Laing, **Knots**