

Math 365-504 **NEATLY PRINT NAME:** \_\_\_\_\_

Exam 2 **STUDENT ID:** \_\_\_\_\_

Fall 2006 **DATE:** \_\_\_\_\_

Scarborough **PHONE:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

***"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."***

\_\_\_\_\_  
***Signature of student***  
***Academic Integrity Task Force, 2004***

<http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf>

My signature in this blank allows my instructor to pass back my graded exam in class or allows me to pick up my graded exam in class on the day the exams are returned. If I do not sign the blank or if I am absent from class on the day the exams are returned, I know I must show my Texas A&M student id during my instructor's office hours to pick up my exam.

Signature of student \_\_\_\_\_

**WRITE ALL SOLUTIONS IN THE SPACE PROVIDED; FULL CREDIT WILL NOT BE GIVEN WITHOUT CORRECT ACCOMPANYING WORK. FULLY SIMPLIFY ALL ANSWERS AND GIVE EXACT ANSWERS UNLESS OTHERWISE STATED. WHERE PROVIDED, PUT YOUR FINAL ANSWER IN THE BLANK PROVIDED. POINTS WILL BE DEDUCTED FOR SPELLING ERRORS. REMEMBER YOUR UNITS!**

*Each blank is worth 3 points.*

\_\_\_\_\_ 1. Write 5241 in Roman numerals.

\_\_\_\_\_ 2. What properties of the Roman numerals are used to write 5241?

\_\_\_\_\_ 3. Fully simplify  $6 \cdot 5^{17} - 5^{17}$ .

\_\_\_\_\_ 4. Fully factor  $20x^2 - 45$ .

\_\_\_\_\_ 5. Compute  $1142_{\text{eight}} \div 74_{\text{eight}}$ .

\_\_\_\_\_ 6. Convert  $123_{\text{five}}$  to base two.

\_\_\_\_\_ 7. Use the definition of absolute value on  $f(x) = |8 - x|$  to rewrite  $f(x)$  as a piece-wise defined function.

8. Formal Justification of why  $2 - (5 - x) = -3 + x$ .

a. \_\_\_\_\_  $= 2 - (5 - x)$

b. \_\_\_\_\_  $= 2 + -5 + (-x)$

c. \_\_\_\_\_  $= 2 + -5 + x$

d. \_\_\_\_\_  $= -3 + x$

\_\_\_\_\_ 9. Of the four operations (addition, subtraction, multiplication and division), which ones are associative over the set of integers?

\_\_\_\_\_ 10. Estimate the cost of 3 pants for \$47 each, 4 cotton shirts for \$38 each, and one \$83 jacket.

(5pts) 11. Circle the numbers that divide 1,481,436.

2 3 4 5 6 8 9 10 11 12

(5pts) 12. Use partial products to calculate  $42_{\text{nine}} * 36_{\text{nine}}$ .

(6pts) 13. Use the charged-field model to illustrate and compute the following.

a.  $-2 - -3$

b.  $(-3)(-2)$

(4pts) 14. Use mental math to find the following (show your mental steps; your computations must be easy to do mentally).

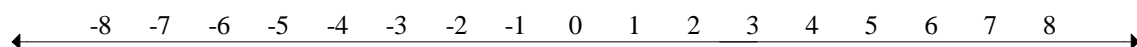
a.  $63 - 37$

b.  $6 \overline{)4236}$

(5pts) 15. Use base-three blocks model and compute  $12_{\text{three}} + 22_{\text{three}}$ .

(4pts) 16. Use the expanded algorithm to calculate  $234 + 596 + 378$ .

(4pts) 17. Use the number line to model and compute  $-3 - ^{-}4$ .



(4pts) 18. Define place value.

(6pts) 19. Compute  $17 * 36$  by using

a. the distributive property of multiplication over addition of whole numbers

b. lattice multiplication

(6pts) 20. Fully explain the steps shown in the subtraction problem (do not find the difference).

$$\begin{array}{r} 6\ 12 \\ \cancel{7}\ \cancel{2} \\ \hline -29 \end{array}$$

(8pts) 21. a. Let  $a, b \in \mathbb{Z}$ . Prove  $(-a)(-b) = ab$ .

(4pts) b. Explain why the product of two negative integers is a positive integer.