

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

Exam 3 **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. POINTS WILL BE DEDUCTED FOR SPELLING ERRORS. REMEMBER YOUR UNITS!**

Each blank is worth 5 points.

\_\_\_\_\_ 1.  $-11^2 - 396 \div 22 \div 2 + 7^0 + 3 - 4 - 5 =$

\_\_\_\_\_ 2. Find the least whole number greater than 256 with exactly 3 positive divisors.

\_\_\_\_\_ 3.  $\gcd(70, 126, 56) =$

\_\_\_\_\_ 4.  $(4 \otimes 6) \oplus^{-5} \equiv \quad \pmod{8}$

\_\_\_\_\_ 5. To determine whether 301 is prime or not, it is enough to check primes up to what prime number divides 301?

\_\_\_\_\_ 6. Fully simplify  $\frac{3^{105} - 27^{34}}{9^{52} + 9^{51}}$ .

\_\_\_\_\_ 7. Give an example of a prime number  $p$  such that  $80 < p < 101$ .

\_\_\_\_\_ 8. If the  $\gcd(a, b) = b$ , find the  $\text{lcm}(a, b)$ .

\_\_\_\_\_ 9. How many positive divisors does  $(600)^{44}$  have? Give answer as a product of integers.

\_\_\_\_\_ 10.  $\text{lcm}(24, 40, 15) =$

\_\_\_\_\_ 11. If  $b > 0$  and  $d > 0$ , find the missing numerator in  $\frac{a}{b} < \frac{?}{b+d} < \frac{c}{d}$ .

\_\_\_\_\_ 12. Fully simplify  $\frac{4x^2 - 25y^2}{10y - 4x}$ .

\_\_\_\_\_ 13. If the scale of a map is 2 inches is equivalent to 5 miles, how far apart are two intersections that are  $\frac{25}{5}$  inches apart on the map?

14. (2pts) Use the colored-rods model to find lcm (3, 4).

15. (3pts) Model and compute  $\frac{1}{2} + \frac{2}{3}$ .

16. (2pts) If 1573 is prime, write **prime**, otherwise prime factor it.

17. (3pts) Use the rectangle model to find the positive divisors of 12.

18. (3pts) Model and compute  $\frac{3}{4} \cdot \frac{1}{3}$ .

19. (3pts) Show all steps in converting  $-4\frac{3}{5}$  to a ratio of integers.

20. (2pts) Use the definition of less than to prove  $\frac{-2}{3} < \frac{-1}{4}$ .

21. (2pts) Define prime number.

22. (4pts) Use the Euclidean Algorithm to find gcd (560, 1000).

23. (3pts) Name two composite numbers, each a three-digit number, which are relatively prime.

24. (3pts) **Prove** why you cannot divide a nonzero rational number  $r$  by zero.

25. (5pts) Using rectangles, model and compute  $\frac{3}{5} \div \frac{1}{3}$ . You may use the provided 'graph paper' to guide you, but only your pencil marks will be graded.

