First Midterm Test 481

MATH 243 Number Theory

Notes:

- Write your answers in the same order as the questions.
- Write legibly.

1. Prove that $\Sigma^{n}_{k=1}$ k! < (n + 1)! for n ≥ 1.

2. If a|c and b|c with (a, b) = 1, then show that ab|c. Prove that (a, b) = 1 is a necessary condition.

3. Find gcd(657, 963), then express it as a linear combination of the numbers.

4. Find all solutions of the Diophantine equation 9x - 18y + 48z = 3.

5. If $a^3|b^2$ then prove that a|b. (Use the F.T.A.)

End of Test