# MEMORIAL UNIVERSITY OF NEWFOUNDLAND
## DEPARTMENT OF MATHEMATICS AND STATISTICS

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FALL 2005 | **Pure Mathematics 3370** | DUE: FRIDAY
| **Assignment 4** | OCTOBER 7, 2005

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Marks

[3]  1. Find the lcm of 907543 and 324597.

[7]  2. Prove that $m = [a, b]$ if and only if $m$ is a positive common multiple which divides every common multiple.

[4]  3. If $m$ and $n$ are positive integers, $(m, n) = 1$, and $mn = s^2$, prove that $m$ and $n$ are squares.

[11]  4. Let $a$, $b$, and $c$ be positive integers. Prove the following using the canonical decomposition of the numbers. (Hint: Take advantage of the symmetry in the problems.)

(a) If $(a, c) = 1$, prove that $(ab, c) = (b, c)$.

(b) Prove that $[a, b, c] = \dfrac{abc(a, b, c)}{(a, b)(b, c)(a, c)}$.

(c) Prove that $(a, b, c)[a, b, c] = abc$ implies $(a, b) = (b, c) = (a, c) = 1$.

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[25]