MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2014
ROUND 6 ALG 2: SEQUENCES AND SERIES

ANSWERS

A) _____

B) _____

C) _____

A) $(A,B,C)=(9,17,25)$ is an arithmetic sequence of positive integers.
If B is reduced by x, then (A,B,C) becomes a geometric sequence of positive integers, whose common multiplier is R. Compute R.

B) Given: $1+3+6+10+...+\frac{n(n+1)}{2}=\frac{n(n+1)(n+2)}{6}$ for any positive integers n.
If twice as many terms were added (that is, n is doubled), the sum would be multiplied by a factor of 7. Compute n, if $n\neq 0$.

C) The first five terms in a sequence of random numbers are 7, 16, 13, 4, and A.
If these integers are sorted, the median and the mean are equal.
A may be any integer - positive, negative or zero.
Compute all possible values of A.