

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 – NOVEMBER 2011
ROUND 1 COMPLEX NUMBERS (No Trig)

ANSWERS

A) _____

B) I II III IV

C) _____

**** NO CALCULATORS IN THIS ROUND ****

A) Evaluate $\sqrt{-18} \cdot \sqrt{-8}$.

B) Let $z = x + yi$ be represented by the point $P(x, y)$.
In what quadrant is P , if $z^{-1} = 3 - 4i$?

C) Evaluate $\sum_{k=0}^{k=3} (1 - \sqrt{3}i)^k$.

Refuse to be intimidated by the mathematical symbolism.
“ Σ ” is just a summation operator.

For example, $\sum_{k=1}^{k=4} k^2 = 1^2 + 2^2 + 3^2 + 4^2 = 1 + 4 + 9 + 16 = 30$.