

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 - JANUARY 2011
ROUND 4 ALG 2: QUADRATIC EQUATIONS

ANSWERS

A) _____

B) _____ inches

C) _____

***** NO CALCULATORS ON THIS ROUND *****

A) Given: $x + \frac{1}{x} = \frac{13}{6}$

Compute the numerical value of $(x+1)\left(\frac{1}{x}+1\right)$.

B) A rectangular piece of cardboard is 13 inches longer than it is wide. If squares whose perimeter is 16 inches are cut from each corner and the resulting figure is folded up to form an open-topped box, the volume will be 1200 cubic inches. Find the sum of the three dimensions of the box.

C) For what value(s) of m are the roots of $x^2 - mx + m + 3 = 0$ nonzero and real?