MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2008 ANSWERS

Round 1 Algebra 2: Complex Numbers (No Trig)

A) (2, 3)   B) (625, 150)   C) $\dfrac{85}{52}$

Round 2 Algebra 1: Anything

A) 2009, 2010   B) −3/2 or 4   C) 32

Round 3 Plane Geometry: Area of Rectilinear Figures

A) $\sqrt{3}:2$ (or $\dfrac{\sqrt{3}}{2}:1$)   B) $8\left(\sqrt{2}-1\right)$ C) $7:5:6$

Round 4 Algebra 1: Factoring and its Applications

A) $(2x+1)(2x-1)(x+1)(x-1)$ B) $(4x-A-3)(4x+A+3)$ C) $2x\left(2x^2+xy+5y^2\right)\left(2x^2-xy+5y^2\right)$

-or equivalents -

Round 5 Trig: Functions of Special Angles

A) $\dfrac{\pi}{6},\dfrac{5\pi}{6}$ B) ±60 C) $\sqrt{2}$

Round 6 Plane Geometry: Angles, Triangles and Parallels

A) 14040 (or 14,040)   B) 139   C) 7

Team Round

A) -1 + 8i D) $-\dfrac{1}{2},\dfrac{3}{2}$

B) $-3 \le t < 2$ ($t \ne 0$) (or equivalent)   E) 3/5

C) 5 x 6   F) (11, 13)