

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 2 - NOVEMBER 2006 ANSWERS**

**Round 1 Algebra 2: Complex Numbers (No Trig)**

A)  $5 + 14i$

B)  $1 + i$

C)  $-138 - (122\sqrt{3})i$   
or equivalent

**Round 2 Algebra 1: Anything**

A) -1.4

B) 11, -7

C) 1947

**Round 3 Plane Geometry: Area of Rectilinear Figures**

A) 492

B) 4 : 3

C)  $12\sqrt{3} - 18$  or  $6(2\sqrt{3} - 3)$

**Round 4 Algebra 1: Factoring and its Applications**

A)  $a(a - 3)(a - 2)(a - 1)$

B)  $x(x + 4)(x - 2)$

C)  $x = -y - \sqrt{1 + y^2}$

**Round 5 Trig: Functions of Special Angles**

A)  $-\frac{\sqrt{15}}{16}$

B)  $\frac{4b - a}{b}$

C)  $\frac{\sqrt{6}}{3}$

**Round 6 Plane Geometry: Angles, Triangles and Parallels**

A) 109

B)  $y = 135 - x$

C) 4

**Team Round**

A)  $1.12 - 5.16i$   
(or  $\frac{28 - 129i}{25}$ )

B) 4.05 mph

C) 544

D)  $x(1 + x)^2(1 - x)(1 - x + x^2)^2(1 + x + x^2)$

E)  $3\sqrt{3}$

F) (3, 12), (6, 6), (10, 5)