

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 – MARCH 2009 ANSWERS**

Round 1 Alg 2: Simultaneous Equations and Determinants

A) -3

B) 29

C) 13

Round 2 Alg 1: Exponents and Radicals

A) 6

B) $\frac{5}{3}, -3$

C) $\pm \frac{5}{6}$

Round 3 Alg2: Anything

A) $0 - i, -1 - i$

B) $\left(\frac{3}{4}, -1\right)$

C) $\frac{1}{41}$

Round 4 Alg 1: Anything

A) $\frac{12}{5}$ (or 2.4)

B) 60

C) $\frac{5}{2}$ (0 is extraneous)

Round 5 Plane Geometry: Anything

A) 18

B) 4

C) $486\sqrt{3}$

Round 6 Alg 2: Probability and the Binomial Theorem

A) $\frac{5}{11}$

B) $\left(12, \frac{5}{32}\right)$ or $(12, 0.15625)$

C) $\frac{112}{625}$ ($= 0.1792$)

Team Round [Non-Calculator Round]

A) $\left(\frac{3+\sqrt{5}}{2}, \frac{3-\sqrt{5}}{2}\right)$ and $\left(\frac{3-\sqrt{5}}{2}, \frac{3+\sqrt{5}}{2}\right)$

D) 206

B) 44 and 146

E) $150\sqrt{3}$

C) $2\sqrt{2}$

F) $\frac{189}{256}$ ($= 0.73828125$)