

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 6 – MARCH 2011 ANSWERS**

**Round 1 Alg 2: Simultaneous Equations and Determinants**

- A)  $(6, -6), (-16, -16)$     B)  $(4, 14)$     C)  $\left(\frac{18}{13}, \frac{12}{13}, 0\right)$

**Round 2 Alg 1: Exponents and Radicals**

- A)  $\frac{4}{27}$     B)  $(7, -9), (-9, 7)$     C)  $(4, \sqrt{29})$

**Round 3 Trigonometry: Anything**

- A)  $\pi^2$     B) 120, 240    C)  $\sqrt{3} + i, -1 + \sqrt{3}i, -\sqrt{3} - i, 1 - \sqrt{3}i$

**Round 4 Alg 1: Anything**

- A) -1, 2, 4 and 5    B) 771    C)  $\frac{x(x-2)}{2x-1}$  ( $\frac{x^2-2x}{2x-1}$  or equivalent)  
- in any order -

**Round 5 Plane Geometry: Anything**

- A) 36    B)  $5h$     C) 3 : 2

**Round 6 Alg 2: Probability and the Binomial Theorem**

- A)  $\frac{216}{625}$  (or 0.3456 or 34.56%)    B) -14    C)  $\frac{5}{6}$

**Team Round**

- A)  $(5, 1, -1)$     D)  $\frac{-5 \pm \sqrt{17}}{2}$
- B)  $\frac{8}{9}$     E)  $\frac{14}{25}, \frac{6}{5}$  (or 0.56, 1.2)
- C)  $\pi - \text{Arc tan}(18)$     F)  $(3, n - 4)$