

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 5 – FEBRUARY 2010 ANSWERS**

**Round 1 Alg 2: Algebraic Functions**

- A)  $(-3, -3), (1, 1)$       B)  $-\frac{13}{2}$       C)  $\left(\frac{1}{8}, 0, -2, 0\right)$

**Round 2 Arithmetic/ Number Theory**

- A) 23      B) 14, 15 and 23      C) 52

**Round 3 Trig Identities and/or Inverse Functions**

- A) 150      B)  $\frac{\pi}{12}, \frac{7\pi}{12}$       C)  $\pm \frac{27}{125}$  (or  $\pm 0.216$ )

**Round 4 Alg 1: Word Problems**

- A) 10      B) 13      C) 151

**Round 5 Geometry: Circles**

- A)  $96^\circ$       B)  $4\sqrt{5}$       C)  $339.25\pi$  (or  $\frac{1357\pi}{4}$ )

**Round 6 Alg 2: Sequences and Series**

- A)  $\frac{46}{63}$       B)  $(31, 33, 15, -12)$       C)  $-1$

**Team Round**

- A)  $\left(\frac{-16-\sqrt{157}}{3}, \frac{-27-\sqrt{157}}{6}\right)$       D) 7 [namely, 9 through 15 inclusive]
- B)  $C$       E)  $(16, 2, 64, 8)$
- C)  $-\frac{336}{625}$  (or  $-0.5376$ )      F)  $\frac{8119}{5741}$