

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 – FEBRUARY 2013 ANSWERS**

Round 1 Alg 2: Algebraic Functions

- A) 5 B) $\left(-6, -\frac{2}{3}, \frac{5}{3}\right)$ C) 10

Round 2 Arithmetic/ Number Theory

- A) 10 B) 49 C) 7

Round 3 Trig Identities and/or Inverse Functions

- A) $\frac{5\sqrt{6}}{12}$ B) $\frac{4\sqrt{3}}{7}$ C) $y = \left(3 - x^{\frac{1}{2}}\right)^2$ or $9 - 2\sqrt{x} + x$

Round 4 Alg 1: Word Problems

- A) 1.5 B) 72 C) 139

Round 5 Geometry: Circles

- A) 164 B) 5.25 C) $72 - 18\pi$ or $18(4 - \pi)$

Round 6 Alg 2: Sequences and Series

- A) $-18i$ B) $29 : 24$ C) $\sqrt{6}, \frac{2\sqrt{15}}{5}$

Team Round

- A) (5, 2) D) 14¢
B) 32 E) $(68 - 48\sqrt{2}, 2)$ or $(4(17 - 12\sqrt{2}), 2)$
C) $\frac{53}{80}$ F) 57