

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 5 - FEBRUARY 2015  
ROUND 3 TRIG: IDENTITIES AND/OR INVERSE FUNCTIONS**

**ANSWERS**

A) \_\_\_\_\_

B) \_\_\_\_\_

C) \_\_\_\_\_

A) Compute:  $\cos\left(6 \cdot \left(\sin^{-1}\left(-\frac{1}{2}\right) + \tan^{-1}(-\sqrt{3})\right)\right)$

B) Solve over  $0 \leq x < 2\pi$  :  $\sqrt{1 - \cos^2(2x)} = \tan x$

C) Given:  $\theta = \cos^{-1}(k) = \tan^{-1}(k)$ , where  $k > 0$   
Compute the unique value of  $\sin \theta$ .

