

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**CONTEST 5 - FEBRUARY 2012**  
**ROUND 3 TRIG: IDENTITIES AND/OR INVERSE FUNCTIONS**

**ANSWERS**

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

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

C) ( \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ )

<b>***** NO CALCULATORS ON THIS ROUND *****</b>
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A) Given:  $\text{Arc tan}(0.75) = \text{Arc sin}(N)$   
Compute  $N$ .

B) Compute:  $\cos\left(\cos^{-1}\left(-\frac{3}{5}\right) - \tan^{-1}\left(-\frac{40}{9}\right)\right)$

C)  $\left(2\sin 7\frac{1}{2}^\circ \cos 7\frac{1}{2}^\circ\right)\left(1 - 2\sin^2 37\frac{1}{2}^\circ\right) = \frac{A - \sqrt{B}}{C}$  Compute the ordered triple  $(A, B, C)$ .