**MASSACHUSETTS MATHEMATICS LEAGUE**
**CONTEST 5 - FEBRUARY 2010**
**ROUND 3 TRIG: IDENTITIES AND/OR INVERSE FUNCTIONS**

******* NO CALCULATORS IN THIS ROUND *******

**ANSWERS**

A) _____

B) _____

C) _____

A) $Cos^{-1}\left(-\frac{1}{2}\right) - Sin^{-1}\left(-\frac{1}{2}\right) = k°$. Compute $k$.

Do not include the degree symbol in your answer.

B) Compute the two smallest positive values of $x$ (in radians) that satisfy $\frac{1-2\sin^2 x}{\sin x \cos x} = 2\sqrt{3}$.

C) Given: $\begin{cases} y = \sin^3 t \\ x = \cos^3 t \end{cases}$, where $0 \le t \le 2\pi$.

Compute all real values of $y$ for which $x = \frac{64}{125}$.