MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 - JANUARY 2010
ROUND 3 TRIG: EQUATIONS WITH A RESAONABLE NUMBER OF SOLUTIONS

ANSWERS

A) _____

B) _____

C) _____

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

A) Let x denote a real number (or an angle measure in radians).
Compute the smallest positive value of x for which $(\sin x)^x = 1$

B) If x denotes the unique solution to $2\cot(2x) - \tan(x) = 0$ between $\frac{\pi}{2}$ and π, compute $\cos(x)$.

C) Solve for θ, where $0° < \theta < 360°$: $\dfrac{\sin\theta}{\sqrt{3}+\sqrt{3}\cos\theta} = -1$