MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 - JANUARY 2009
ROUND 3 TRIG: EQUATIONS WITH A RESAONABLE NUMBER OF SOLUTIONS

ANSWERS

A) _____

B) _____

C) _____

******* NO CALCULATORS ON THIS ROUND *******

A) Solve for x, where $0 \leq x < 2\pi$. Give exact answers in terms of π.

$$3\cos 2x = 2\cos^2 x$$

B) Solve for θ, where $0° \leq \theta < 360°$: $\left(\sqrt{2}\cos\theta - \sqrt{2}\sin\theta\right)^2 = 3$

C) Solve for θ, where $0° \leq \theta < 360°$: $\sqrt{3}\tan^2\theta + \tan\theta = \sqrt{3}\tan\theta + \sec^2\theta - \tan^2\theta$