MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 - JANUARY 2014
ROUND 3 TRIG: EQUATIONS WITH A RESAONABLE NUMBER OF SOLUTIONS

ANSWERS

A) _____

B) _____

C) _____

A) Compute <u>all</u> possible values of x for which $\sin\left(x^2 - x\right) = 1$ and $x^2 - x$ is the smallest positive angle measure (in degrees).

For the following problems, your answer(s) must be in radians.

B) Solve for x over $0 \le x < \frac{\pi}{2}$. $\sec(2x)\csc(2x) = -4$

C) Solve for x over $0 \le x < \pi$. $3\left(\sin x - \cos x\right) + 4\left(\cos^3 x - \sin^3 x\right) = 0$