

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2014
ROUND 5 TRIG: FUNCTIONS OF SPECIAL ANGLES**

ANSWERS

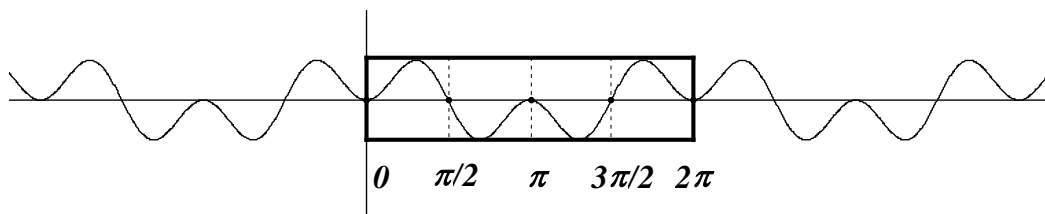
A) _____

B) _____

C) (_____ , _____)

A) Determine all values of x for which $\frac{\tan x - 1}{(2 \sin x - 1) \cos x (\tan^2 x - 3)}$ is undefined over the interval $0^\circ \leq x \leq 180^\circ$. Express your answer(s) in degrees.

B) The graph of $f(x) = \sin(x)\sin(2x)$ has a period of 2π as is easily seen in the graph below



Compute $f\left(\frac{-602\pi}{3}\right) + f\left(\frac{602\pi}{3}\right) - \left(f\left(\frac{\pi}{4}\right)\right)^2$.

C) Given: $m\angle A = 120^\circ$, $AB = AC = 11$

$EFGH$ is a square

If the area of $EFGH$ is $M - N\sqrt{3}$,
compute the ordered pair (M, N) .

