

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2014
ROUND 3 TRIG: IDENTITIES AND/OR INVERSE FUNCTIONS

ANSWERS

A) (_____ , _____)

B) _____

C) _____

A) Given: $\cos(\sin^{-1}(-.5)) + \cot\left(\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)\right) + \cos^{-1}\left(\cos\frac{\pi}{6}\right) = \frac{\pi - A}{B}$

Compute the ordered pair (A, B) .

B) Compute all values of x (in degrees), where $0^\circ \leq x < 360^\circ$, that satisfy

$$\cos(x + 150^\circ) + \cos(x + 30^\circ) = \cos(290^\circ)$$

C) Compute: $\sin\left(2\sin^{-1}\left(-\frac{4}{5}\right) + \frac{\pi}{2}\right)$