

MASSACHUSETTS MATHEMATICS LEAGUE
NOVEMBER 2003
ROUND 5: TRIGONOMETRY
NON-CALCULATOR

ANSWERS

A) _____

B) _____

C) _____

A) Evaluate and leave the result in simplest radical form.

$$\sin 30^\circ + \cos 30^\circ + \cot 225^\circ + \tan 135^\circ + \csc 120^\circ + \sec 300^\circ$$

B) Solve for $0^\circ \leq x < 180^\circ$: $\cos(x) \cot^2(x) = \cos(x)$

C) The area of a regular octagon is $288\sqrt{2}$. The circumference of its circumscribed circle is $k\pi$. What is the value of k ?