

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**CONTEST 2 - NOVEMBER 2015**  
**ROUND 5 TRIG: FUNCTIONS OF SPECIAL ANGLES**

**ANSWERS**

A) \_\_\_\_\_

B) \_\_\_\_\_

C) \_\_\_\_\_

A) Compute:  $\frac{(\sec 330^\circ \cdot \sin 240^\circ \cdot \tan 495^\circ)^3}{(\csc 120^\circ \cdot \cot 225^\circ)^2}$

B)  $P = \sin x \cdot \cos 2x \cdot \tan 3x \cdot \cot 4x \cdot \sec 5x \cdot \csc 6x$   
 Compute  $P$ , if  $x = 15^\circ$ .

C) Given:  $\overline{AB} \perp \overline{CD}$ ,  $\overline{CA} \perp \overline{AD}$ ,  $\overline{CE} \perp \overline{EA}$ ,  $\overline{PD} \perp \overline{AD}$ ,  
 $C, A$ , and  $Q$  are collinear,  $m\angle ECB = 120^\circ$   
 $QA = PD = \sqrt{3}$ ,  $AB = 6$ ,  $BD = 6\sqrt{3}$ ,  
 Compute  $AD + BC + EA + AP$ .

