

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 2 - NOVEMBER 2010  
ROUND 5 TRIG: FUNCTIONS OF SPECIAL ANGLES**

**ANSWERS**

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

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

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

**\*\*\*\* NO CALCULATORS ON THIS ROUND \*\*\*\***

A) If possible, compute the exact value of  $\frac{\cot(45^\circ) + 2\sin(210^\circ)}{1 + \tan(22.5^\circ)}$ ; otherwise, specify the value as undefined.

B) Compute:  $\left( \sin 510^\circ \cos 240^\circ \cot^3 315^\circ \csc \frac{11\pi}{6} \sec \left( \frac{-7\pi}{3} \right) \right)^5$

C) Given:  $ABCD$  is a rectangle,  
 $BE = 1$ ,  $DE = DF$ ,  $CF = CB$   
 $\overline{EF} \perp \overline{FB}$  and  $m\angle 2 = 2 \cdot m\angle 1$

Compute  $\cos(\angle BED)$ .

