

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 6 - MARCH 2013  
ROUND 2 ALG1: EXPONENTS AND RADICALS**

**ANSWERS**

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

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

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

<b>***** NO CALCULATORS IN THIS ROUND *****</b>
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A) Given:  $(A+B)^3 = 258$ ,  $(AB)(A+B) = 5$   
Compute  $A^3 + B^3$ .

B)  $\sqrt[3]{\frac{82-x}{2x+1}}$  is a positive integer.  
Compute the largest possible integer value of  $x$  for which this is true.

C) The equation  $\sqrt{4x+1} + \sqrt{10-x} = 7$  has two real solutions, one an integer and the other a rational fraction. The fractional solution is  $\frac{A}{B}$ . Compute the ratio  $A : B$ .