

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**CONTEST 2 - NOVEMBER 2012**  
**ROUND 4 ALG 1: FACTORING AND ITS APPLICATIONS**

**ANSWERS**

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

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

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

A) How many factors of 126 are also factors of 132?

B) Given:  $x^3y - xy^3 = 12$  and  $x^3y^2 - x^2y^3 = 15$

Compute  $\frac{1}{x} + \frac{1}{y}$ .

C) Solve for  $x$  over the reals.  $(x+1)(x-6)(x+3) - (x+1)^2(x-2) > 0$