

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**CONTEST 4 - JANUARY 2016**  
**ROUND 2 ALG 1: FACTORING AND/OR EQUATIONS INVOLVING FACTORING**

**ANSWERS**

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

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

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

A) Solve for  $x$  over the rational numbers.

$$2x = 3 + \frac{15}{x+2}$$

B) The difference between the squares of two positive integers  $A$  and  $B$  is 72.

Compute all possible ordered pairs  $(A, B)$ , where  $A > B$ .

C) Factor completely over the integers using the fewest possible number of minus signs.

$$(x^2 + y)(x^2 - y) + x^2(y^2 - 1)$$

Consider expressions like  $(a - 1)$  and  $(-1 + a)$  to each have one minus sign.