MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2016
ROUND 4 ALG 1: FACTORING AND ITS APPLICATIONS

ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) Compute <u>all</u> values of x for which $(3x-2)(3x+1)=4$.

B) Given: $A > B > 0$ and $A \cdot B = 180$, for integers A and B.
The greatest common factor of A and B is 1 for exactly j distinct ordered pairs (A, B) and greater than 1 for exactly k distinct ordered pairs (A, B). Compute the ordered pair (j, k).

C) For $A > 0$, $\dfrac{(x+2)^2-81}{(7-x)(A+x)} \geq 0$ is satisfied for <u>exactly</u> 3 distinct integer values of x.
Compute <u>all</u> possible integer values of A.