

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**JANUARY 2006**  
**ROUND 4 ALGEBRA TWO: QUADRATIC EQUATIONS**  
**ANSWERS**

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

B) (\_\_\_\_,\_\_\_\_,\_\_\_\_)

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

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A) Find both real solutions for x:  $x^2 + (x + 1)^2 = (x + 2)^2$

B) Find all real values of z if  $2z^2 + yz + 3 = 0$  and  $2y = y^2 - 35$

C) Shalamar owns several clothing stores. If she sells her sweaters at a price of \$100, her stores average 102 sales per month. Shalamar finds that for every \$5.00 she drops her price her stores sell on average 3 additional sweaters; each \$5 increase in price loses her three sales, however. What price will provide the greatest income for Shalamar?