For a certain company, the cost for producing x items is 35x+300 and the revenue for selling x items is 75x−0.5x2.

Variables /\* P = Profit, R = Revenue, and C = Cost.

**Part A**: The expression will be **P = R - C**

**50= (75x-0.5x^2) - (35x+300)**

Simplify by taking 75x – 35x to get 40x making the expression

simplified as **40x-0.5x^2-300=50**

**Part B**: Solving using the quadratic equation as **ax^2+bx+c=0**

**-0.5x^2+40x-300=300** ==> **x=10 or x=70**

Using the quadratic formula, we can go through the process in solving the problem.

**x = (-b±sqrt(b2-4ac))/(2a)**

To use the quadratic formula, we must convert **-0.5^2+40x-300=300** ==> **ax^2+bx+c=0**; to do this we must first subtract the profit (50) from both sides of the equation **-0.5^2+40x-300-50=50-50**. In which the equation will become -**0.5^2+40-350=0** where now **a=-0.5^2,b=40,and c=-350** and now we can use the quadratic formula; **x = (-40 ± sqrt(40^2-4(-0.5(-350))/(2\*(-0.5))** using the order of operation we can start by squaring the 40**(x=(-40 ± sqrt(1600-4(-0.5)(-350))/(2(-0.5))** , then, multiplying -4 times -0.5**(x=(-40** ± **sqrt(1600+2(-350))/(2(-0.5))**, and followed by 2 times -350**(x=(-40** ± **sqrt(1600-700))/(2(-0.5))**. Next add 1600 to -700**(x= (-40** ± **sqrt(900))/(2(-0.5)),** after that, get the square root of 900**(x=(-40** ± **30)/(2(-0.5)),** next multiply 2 times -0.5**(x= -40** ± **30)/-1**, now solve the equation **-40 + 30=10**; **x=10/1={10} or -40 – 30 = -70; x=-70/-1={70}**

**Part C:** the answer for if this company can make a profit of $2,500 dollars, is no.