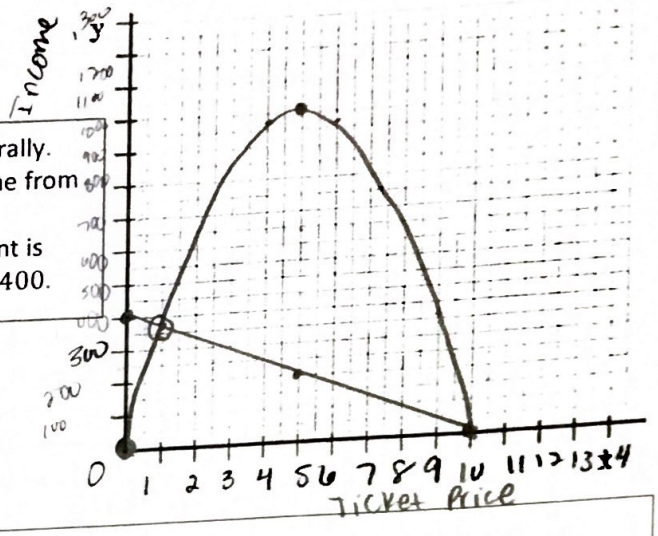
➢ Application of Quadratic and Linear Inequalities

Each year the 'Rock the Vote' committee organizes a public rally. Based on previous years, the organizers decided that the income from ticket sales, $I(t)$, is related to ticket price (t) by the equation $I(t) = -40t^2 + 400t$. Cost, $C(t)$, of operating the public event is also related to ticket price (t) by the equation $C(t) = -40t + 400$.



Calc Max

A) What ticket price would generate the maximum income? Where is this shown on the graph?

At the maximum of parabola (5, 1000) Max income at tix price $5.00

calc intersect

B) For what ticket price would the operating cost be equal to the income from ticket sales?

"Where is break even?" at tix price = $1.00 & $10.00

C) Write and solve an inequality to show where the operating cost is greater than the income from ticket sales.

$-40t+400 > -40t^2+400t$

O.C. > Income

[0, 1)

~~(0, 1)~~

D) Write and solve an inequality to show where the income from ticket sales is greater than the operating cost.

$-40t+400 < -40t^2+400t$ (1, 10)

$-40t^2+400t > -40t+400$

I > O.C.