Quadratics - Parabolas

$$y = ax^2 + bx + c$$

Satellite dishes, flashlights, headlights, amphitheatres

Max & Min Problems

Vertex

A helicopter shuttle service operating between an airport and center of the city charges a fare of $10 and carries 300 persons per day. The manager estimates for he will lose 15 passengers for every increase of $1 in the fare. Find the most profitable fare for him to charge.

$y = (10 + x)(300 - 15)$
$\quad = 3000 - 150x + 300x - 15x^2$
$\quad = 3000 + 150x + 3000$
$\quad = -15x^2 + 150x + 3000$

Vertex occurs at $-b/2a$ which is $-150/-30 = 5$

He should increase the fare by $5, he will lose 75 customers, but his new intake will be 15(225) = $3,375