# 🐞 *Essential Skills for Chapter 4* correction ❧

2. (§4.1)  Find optimal values using quadratic models .
Paradise Travel Agency's monthly profit P (in thousands of dollars) depends on the amount of money x (in thousands of dollars) spent on advertising per month according to the rule $P(x) = 7 - 2x(x - 4)$ .  What is Paradise's maximum monthly profit?

$P(x) = 7 - 2x(x - 4) = -2x^2 + 8x + 7$ we complete the square

$= -2(x^2 - 4x \quad) + 7$

$= -2(x^2 - 4x + 4) + 7 + 8$

$= -2(x - 2)^2 + 15$

We identify this as a parabolic function (opening down) with a maximum at (2,15).
So maximum is 15 (thousand) and the advertising budget should be 2 (thousand)