

IB Poly 1

15. A small manufacturing company makes and sells x machines each month. The monthly cost C , in dollars, of making x machines is given by

$$C(x) = 2600 + 0.4x^2.$$

The monthly income I , in dollars, obtained by selling x machines is given by

$$I(x) = 150x - 0.6x^2.$$

$P(x)$ is the monthly profit obtained by selling x machines.

- Find $P(x)$.
- Find the number of machines that should be made and sold each month to maximize $P(x)$.
- Use your answer to part (b) to find the selling price of **each machine** in order to maximize $P(x)$.

15. The graph of a quadratic function has y -intercept 10 and **one** of its x -intercepts is 1.
 The x -coordinate of the vertex of the graph is 3.
 The equation of the quadratic function is in the form $y = ax^2 + bx + c$.

- (a) Write down the value of c . [1]
- (b) Find the value of a and of b . [4]
- (c) Write down the second x -intercept of the function. [1]

Working:

Answers:

- (a)
- (b)
- (c)