

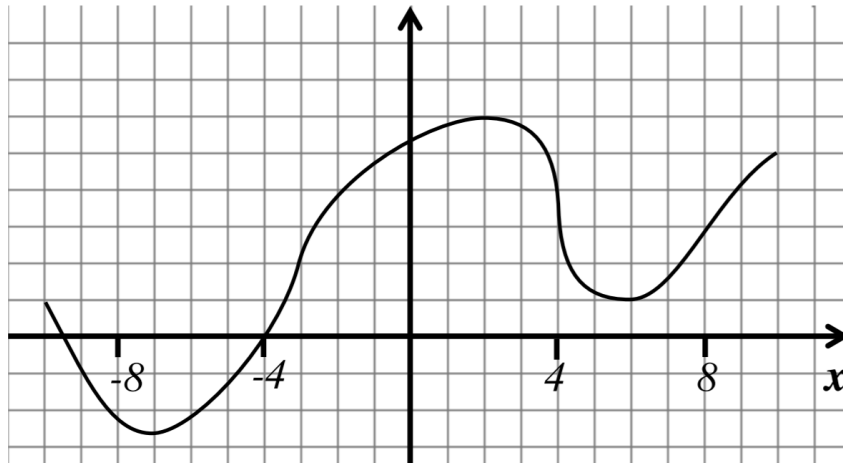
P1) The cost function is given by  $C(q) = 2\sqrt{q+5}$ . Find the average cost of producing 16 units.

P2) The demand equation is given by  $p = \left(\frac{1}{2} - \frac{q}{200}\right)^2$  where  $p$  is the unit price and  $q$  is the demand quantity.

- Estimate the revenue made by selling the 10th unit.
- Find the demand quantity at which revenue is maximised.

P3) Below is a graph of  $f'(x)$ , the derivative of  $f(x)$ . The domain of the function  $f(x)$  is  $(-10,10)$ .

- Determine if the function  $f(x)$  has any critical points.
- Determine if the function  $f'(x)$  has any critical points



P4) Function

$$f(x) = \begin{cases} x^3 - 3x^2 & 1 \leq x \leq 3 \\ \cos(\pi x) - 1 & 0 \leq x < 1 \end{cases}$$

is defined on the interval of  $[0,3]$ .

- Determine if Extreme Value Theorem can be applied to this function.
- Find the absolute minimum and absolute maximum.