

Monopoly Market Calculation Example

A pharmaceutical company has been selling a drug protected by a patent into a monopoly market for a number of years. Production is kept in balance with sales.

The total cost C (£ day⁻¹) is given by the equation: $C = 800 + 40q + 0.1q^2$

and the demand equation is given by: $p = 82 - 0.25q$

where p (£ kg⁻¹) is the price and q (kg day⁻¹) is the output

Calculate the quantity of drug that should be sold to maximise profit, the price and the overall profit for the pharmaceutical company.