



Capita Selecta

Stoomcursus

Snel, gestructureerd en effectief tentamens halen

Sinds 1994 verzorgt Capita Selecta cursussen ter voorbereiding op een tentamen. De cursus bestaat uit drie of vier lessen van drie uur die worden gegeven door zorgvuldig geselecteerde repetitoren. Dit zijn ouderejaars studenten of net afgestudeerden die het vak succesvol hebben afgerond. Tijdens de cursus wordt de lesstof behandeld aan de hand van een lespakket met oude tentamenvragen. Er is te allen tijde gelegenheid om vragen te stellen.

Quantitative Methods & Techniques: Mathematics

Part I: True/False questions

Problem I

The marginal cost function and the demand function of a certain product are given by the following equations.

$$MC = Q^2 - 50Q + 700 \quad \text{and} \\ P = 1700 - 40Q$$

In the marginal cost function the variable Q represents the number of units produced and MC represents the marginal costs in dollars.

In the demand function the variable P represents price per unit in dollars, and Q represents the number of units demanded.

Fixed costs are 2000 dollars.

1. Total costs of producing 15 units is 2175 dollars.
2. Minimum marginal costs is 75 dollars.
3. Assuming that all units produced will be sold, profit is maximized when $P = 900$ dollars.

Problem II

In question 4 below we consider the function

$$y(x) = xe^{4x}. \text{ Its second derivative is denoted by } y''(x).$$

4. The following statements are both true.
 - The equation $y''(x) = 0$ is given by $8e^{4x} + 16xe^{4x} = 0$.
 - The solution of the equation $y''(x) = 0$ gives the x -coordinate of a point of inflection of the function $y(x)$.

In question 5 below $y(x)$ is a function with derivative $y'(x)$ and second derivative $y''(x)$.

5. If $y(x)$ attains a local maximum at $x = a$, then $y'(a) = 0$ and $y''(a) > 0$.

6. $\int \frac{10}{2x+1} dx = 10 \ln |2x+1| + c$ for any constant c .

Problem III

In questions 7 and 8 below we consider the situation where an amount of €50000 is invested at a nominal annual rate of 6%.

7. If interest is compounded continuously, then the total value of the investment after 10 years lies in between €89540 and €89545.
8. If interest is compounded four times per year, then the annual percentage rate (or effective annual rate) is larger than

Antwoorden en andere tentamenvragen?

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