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**FAKULTEIT OPVOEDKUNDE**
**DEPARTEMENT KURRIKULUMSTUDIE**
**KURRIKULUMSTUDIE: WISKUNDE 174**
**TOETS: 1 JUNIE 2006**

**TYD: 2 uur**
**PUNTE: 100**
**EKSAMINATOR:**
**AI Olivier**

An entrepreneur starts a new business.

He *produces* gadgets at a cost of $y = 4x + 200$ rands and then *sells* it at $y = 5x$ rands, where $x$ is the number of gadgets.

*Note: He assumes that he sells all the gadgets he produces.*

**Total Profit = Total Income – Total Expenditure**

**Profit per gadget = Selling price – Production cost**

1. Calculate his profit for different numbers of gadgets. Make a *profit calculator* to give the *profit* if the *number of gadgets* is entered.

2. Draw graphs of the *cost-function* $y = 4x + 200$ and the *selling price-function* $y = 5x$ on the same system of axes.

3. How many gadgets must he produce and sell to make a profit?
   Can you show this on the graphs?

4. How many gadgets must he make and sell to make a profit of R1000?

5. Of course he can increase his profit by making and selling more gadgets.
   But there are limits to the market and to his production capacity.
   Show how he can increase his (unit) profit by reducing his production costs and/or increasing his selling price. Illustrate it graphically – *use sliders to show how changes in the parameters change the profit …*

6. Draw the graph for the *profit-function* on the same system of axes.
   Can you deduce the same information as above from this graph?
   Write down a formula (in simplest form) for the *profit-function* using $x$.
   How can you *check* that you are right?

7. What is the situation if he does not sell all the gadgets that he makes?