MA162: Finite mathematics

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Schedule:

- HW 3.1 is due Friday, Sep 30th, 2011.
- Exam 1 is Today, Sep 26th, 5:00pm-7:00pm in CB106.

Today we will cover the Ch 1 part of the practice exam

Travelling salesman

- A courier travels from city Ashton with coordinates $(0, 0)$ to city Cranston with coordinates $(125, 135)$. He must pass through **exactly one of the cities** Brady with coordinates $(72, 45)$ or Dalton $(45, 72)$ along the way. Assume he travels a straight line between cities.

- Which city should he pass through (Brady or Dalton) in order to minimize his trip distance from Ashton to Cranston?

- What is the total minimum length of his trip from Ashton to Cranston, taking into account the stop in the city from part (a)?

Triangles and slope

- Point A has coordinates $(7, 3)$,and point B has coordinates $(0, 5)$.
- What is the distance from A to B and what is the slope of the line joining A to B?
- Suppose that the point C with coordinates $(x, 9)$ is such that the triangle ABC is a right triangle with right angle at B. Determine the value of x. (Note: The coordinates of A and B were given at the top of the problem.)

Cost-Revenue-Profit

- The Flörgerstrøm company makes valve cleaning units for flügelhorns. The cost function for their manufacturing line is $C = 2x + 3500$, where x is the number of VCUs produced per month and C is measured in dollars. The company expects \$7 in revenue per unit.

- Determine the linear profit function for the Flörgerstrøm company in the usual form $P = mx + b$, assuming they can sell all the units they manufacture.

- Determine the break-even value for x and the break-even cost C at that value for x.

Supply-demand

- In a free market, the supply equation for a supplier of corn is $x = 35p + 200$ where the price p is in dollars and x is in bushels. When the price is $\$4$ per bushel the demand is 1170 bushels. When the price goes up to $\$18$ per bushel the demand drops to 0 bushels. Assuming that the demand equation is also linear, find the equilibrium price and the number of bushels supplied at that equilibrium price.