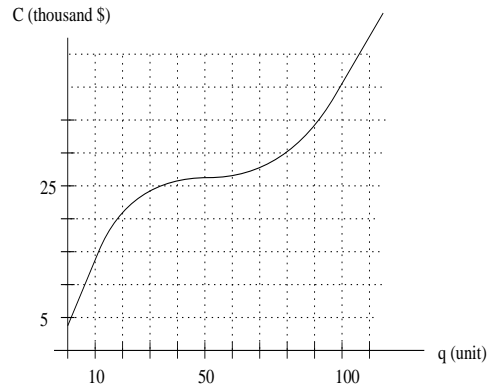
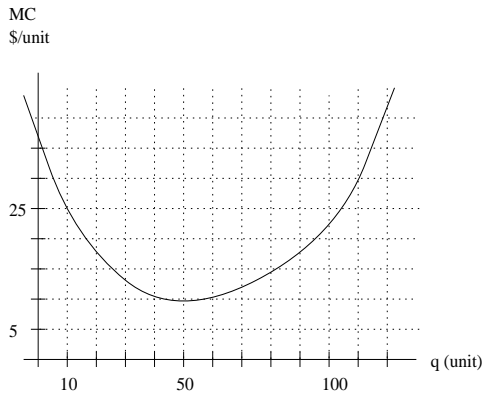


Section 5.5 Day 1  
 Fundamental Theorem of Calculus

1. If  $w'(t)$  is the rate of growth of a child in pounds per year, what does  $\int_5^{10} w'(t)dt$  represent?
2. For each graph below, estimate how much it would cost to increase production from 70 to 80 units.



3. The marginal cost of manufacturing  $x$  yards of a certain fabric is  $C'(x) = 3 - 0.01x + 0.000006x^2$  (in dollars per yard). Find the increase in cost if the production level is raised from 2000 yards to 4000 yards.
4. As machines get older, the cost of maintaining them tends to increase. Suppose that for a particular machine, the rate at which the maintenance cost is increasing is approximated by the function  $M(t) = (1.5t + 4)\sqrt{1.5t^2 + 8t}$ , where  $t$  is the number of years from the time of purchase. What is the total cost of maintenance for the period 4 years to 9 years after purchase (assuming any warranty expires within the first 4 years)?

5. The management of Staedtler Office Equipment has determined that the daily marginal cost function associated with producing battery-operated pencil sharpeners is given by  $C'(x) = 0.000006x^2 - 0.006x + 4$  where  $C'(x)$  is measured in dollars per unit and  $x$  denotes the number of units produced. Management has also determined that the daily fixed cost incurred in producing these pencil sharpeners is \$100. Find Staedtler's daily total cost for producing
- the first 500 units
  - the 200th through 400th units
6. Tempco Electronics, a division of Tempco Toys, manufactures an electronic football game. An efficiency study showed that the rate at which the games are assembled by the average worker  $t$  hours after starting work at 8 A.M. is  $-\frac{3}{2}t^2 + 6t + 20$ , ( $0 \leq t \leq 4$ ) units per hour.
- Find the total number of games the average worker can be expected to assemble in the 4-hour morning shift.
  - How many units can the average worker be expected to assemble in the first hour of the morning shift? In the second hour of the morning shift?