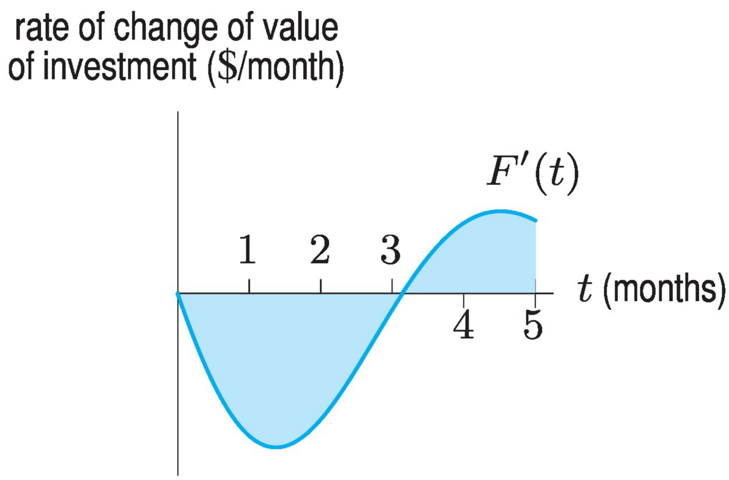
Name:
Section 5.5 – example
Math 151

1. The graph shows $F'(t)$, the rate of change of the value, $F(t)$, of an investment over a 5-month period.



   (a) When is the value of the investment increasing in value and when is it decreasing?
   The investment decreased in value during the first 3 months, since the rate of change of value is negative then. The value rose during the last 2 months.

   (b) Does the investment increase of decrease in value during the 5 months.
   Total change in value $= \int_0^5 F'(t)\,dt.$. This is the area under the curve. Since the area below the x-axis is greater than the area above the x-axis the integral is negative. Thus, the value of the investment during this time period has decreased.

2. The marginal cost, $C'(q)$ (in dollars per unit) of producing q units is given in the following table

q	0	100	200	300	400	500	600
$C'(q)$	25	20	18	22	28	35	45

   (a) If the fixed cost is $\$10,000$, estimate the total cost of producing 400 units.
   Use the average of the left and right hand sum to estimate the variable cost of produring 400 units

$$\int_0^{400} C'(t)\,dt \approx 8,650$$

   Then the total costs is

$$fixedcosts + variablecosts = 18,650.$$

   (b) How much would the total cost increase if production increases one unit, to 401 units.

$$C'(400) = 28.$$