Optimizing

1. For time $t \geq 0$ in days, the rate at which photosynthesis takes place in the leaf of a plant, represented by the rate at which oxygen is produced is approximated by

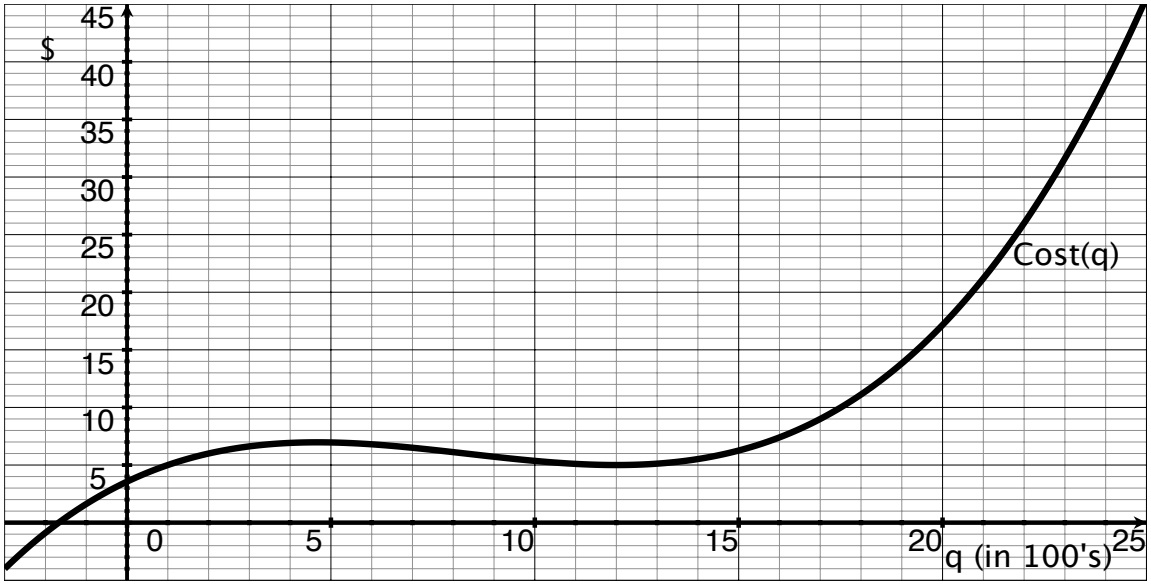
$$p(t) = 100(e^{-.02t} - e^{-.1t})$$

When is photosynthesis occurring fastest?

2. A farmer has 2400 ft of fencing and wants to fence off a rectangular field that borders a straight river. He needs no fence along the river. What are the dimensions of the field that has the largest area?

3. The market price for 100 widgets is \$1.20.

(a) Draw the revenue function for a company selling widgets.



(b) Find the revenue function (R) for a company selling q widgets.

(c) Find the marginal revenue of the 101^{st} widget.

(d) Use the graph above to estimate the number of widgets that should be produced so that the company's profits will be maximized.

(e) Find the number of of widgets that should be produced so that the company's profits are maximized.