

Math 111 Final Quick Review

Graphs Review:

A **rate** of change of BLAH = $\frac{\text{change in BLAH}}{\text{change in } x}$

Graphically,

rate = slope of a line that intersects BLAH.

A **diagonal** line is a line through the origin and intersects the graph at one point.

(Average Cost, Average Variable Cost,
Average Revenue, Average Trip Speed)

A **secant** line is a line thru two points on a graph. (Average Speed, Incremental Rate)

A **tangent** line is a line that `just touches' a curve at a point (without crossing).

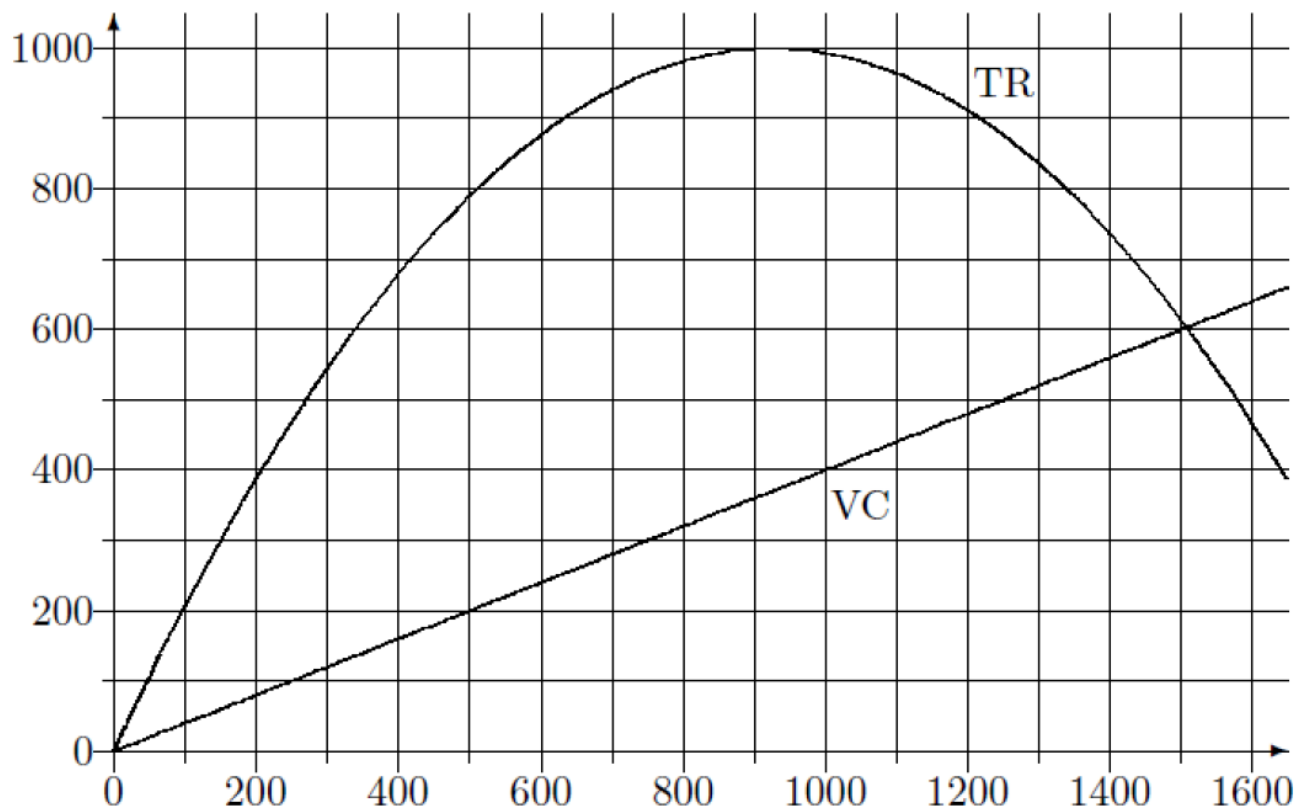
(Marginal Revenue, Marginal Cost)

Computation Questions:

Almost every questions we asked was one of the following:

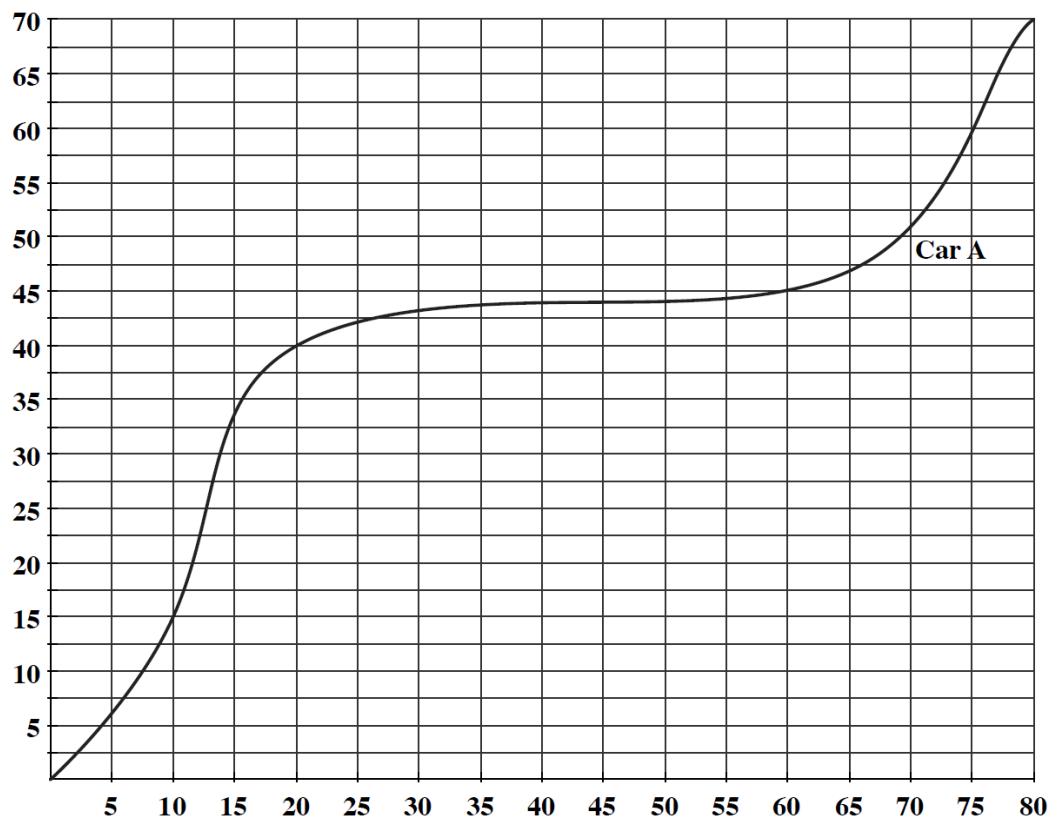
- A) Draw a diagonal line and find the slope.
- B) Draw a diagonal line with a given slope and find where it intersects the graph.
- C) Draw a secant line and find the slope.
- D) Draw a line with a given slope and slide ruler parallel until it gives a secant with the same slope and the desired interval length.
- E) Draw a tangent line and find the slope.
- F) Draw a line with a given slope and slide the ruler parallel until it gives a tangent with the same slope.
- G) To find the largest gap, match slopes!

An old first midterm question:



- Compute the marginal revenue at $q=300$.
- Find the longest interval over which average revenue is between \$0.50 and \$0.80 per Thing.
- Suppose $FC = \$300$. What order size will maximize the profit, and what is the maximum possible profit?

An old final question:



- Find the two ten-minute intervals during which the average speed is 0.5 mpm.
- What is the lowest average trip speed?
- A second car, Car B, starts next to Car A and travels a constant 0.9 mpm. Find the time at which Car A is ahead of Car B by the largest distance.

Algebraic Material:

- A) **Lines:** Find slope and use $y = m(x-x_1) + y_1$
Then expand to get $y = mx+b$.
- B) **Quadratics:** Given $y = ax^2 + bx + c$, we know if $a>0$, then it opens upward, and if $a<0$, then it opens downward. And we know the vertex occurs at $x = -\frac{b}{(2a)}$.
(And if we have to solve an equation involving a quadratic, then we use the quadratic formula).
- C) **Exponentials/Logarithms:** Know how to work with and solve exponential/logarithm problems.
- D) **Functional Notation:** Be good with functional notation, be able to go between our various function definitions.
- E) **Solving systems:** Be able to solve a system of equations.

Interest Bearing Account

Regular Payments?

Lump Sum?

Payments
at END or
BEGINNING
of each
period?

Balance
going up
(FV)
or
Balance
going down
(PV)?

Simple interest,
Discrete
Compounding,
or
Continuous
Compounding?