Closing Tue: Webassign Intro
Closing Thur: Supplement 1-3
Supplement 4

Entry Task (Review):

Assume you are given an overall amount graph (such as total distance). In words, write down how you would answer a question that asks you to find…

i) …overall rate of change at t=8.

ii) …rate of change from t=3 to t=7.

iii) … a time when the overall rate is 10 miles/min.

iv) …. a 5-minute interval when the rate of change is 4 deg/min

Today: Sup. 5 Functional notation.
Get out graph and tables that go with Supplement 5 (pages 4, 5, and 6 of the lecture pack)

Def'n: A **function** is a rule that produces a single output for every allowable input.

Temp vs time for a chem. reaction

Let t = time (in minutes)

P = temperature (in ^{o}C)

P(t) = "temperature at time t"

For the rest of today, we will practice translating between

1. Functional notation
2. Graphs (values, heights, slopes)
3. English (time, temp, rates)

Very Important Notes:

If f(t) = "height at t", then

$f(b) - f(a)$ = "change in height from t=a to t=b"

$\frac{f(b)-f(a)}{b-a}$ = "slope of the secant line thru t=a and t=b"

= "incremental ave. rate"

$\frac{f(b)-f(0)}{b-0}$ = "slope of the secant line thru t=0 and t=b"

= "overall ave. rate"

$\frac{f(b)}{b} = \frac{f(b)-0}{b-0}$ = "slope of the diagonal line thru t=b"

Notes:

1. If f(0) = 0, then the overall average rate is the same as the slope of the diagonal line.
2. a = start of the interval
   b = end of the interval

Intervals:

Examples:

"*h* minutes after *t*": t + h

"*h* minutes before *t*": t – h

"a 2-minute interval starting at *t*"

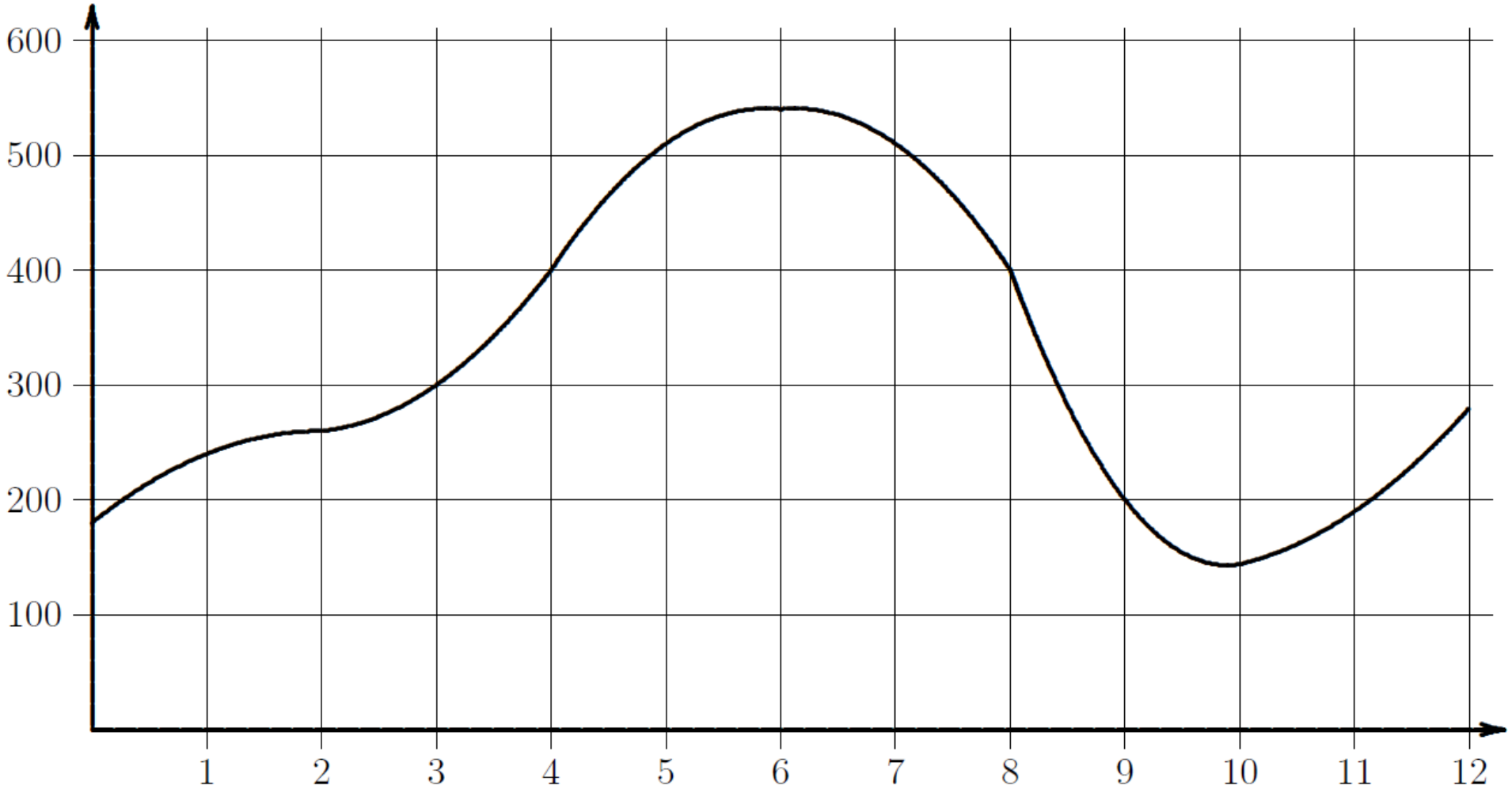
start = t , end = t + 2

"an *h*-minute interval starting at 3"

start = 3 , end = 3 + h

"a 5-minute interval ending at *b*"

start = *b* – 5 , end = *b*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