Possible 3-3 and 3-4 Activities

3-3: Average Rate of Change

Argue units in several contexts.

Argue why the arithmetic of the formula makes sense: Why change in y contains no “initial amount”. Argue why division is “how many in each group” division. Argue why it means that we are “sharing” the change in y among all the hours.

When is the average rate of change = the instantaneous rate of change (linear vs. non-linear). What is slope of the line/curve for various (small, large) intervals). Difference between rate at an instant vs. avg. rate over a period of time.

Active Reading Approach: 1.3

Checkpoint 1.3.2: Train displacement vs. time: f(3) - f(1) means? Avg speed units? What would delta y = negative mean?

1.3.9, 10: Does order matter in the subtractions?

APC: 1.3.1: Write equation of the secant line (Note: What would this line represent in context?)

1.3.2: Comparing tables: Which has greater avg. rate of change on given intervals?

State meaning of average rate in a sentence

Predict future.

HW: #3: Given f(x) formula, find avg rate on (3, 34) to (5, 82), (c, k) to (q, t), (x, f(x)) to (x+h, f(x+h))

#7-8: Good questions on what “avg. rate = constant” means in contexts: Multiple Choice. Is there an interval where AV= 5000 ft/min?

#9: When is temperature changing most rapidly?

MFG: 1.4: 1.99: Which grew faster: 11.2 cm in 14 days or 13.52 cm in 18 days?

1.102: Which is steeper? Need to divide over same horizontal difference.

1.106: T/F: (10, 7) on graph means the slope = 7/10.

HW: #19: If m=7/10 and delta y = 10. What is delta x (several like this. Could put into contexts).

3-4: Exponential Functions, Revisited

3-4-1: Exponential Functions

State what it means to be “growing exponentially”

Given sequence/table: Is it exponential, linear, other: What to do to make that determination? Active Reading Approach 3.4.18

Rate of change is multiple of or itself (via table: 2^n?).

S-Z: p. 420: 25(4/5)^x: Each # means for value of car (N- Need to present with b = fraction, decimal)

p. 421: Newton’s Law of Cooling: What does HA mean? (better in APC)

p. 425: Logistic Growth?

p. 485: Given 2 points, find exponential formulas (#25-26).

MFG: 4.1: Hw #17: ¾ of size every TWO weeks

#18: Given half-life

#42: Given 2 values of car.

#61: True/False: If grow by 48% over 6 years, then 8% each year.

3-4-2: Modeling with exponential functions revisited.

s-Z: Compound monthly vs. quarterly: Avg. rate change, double time.

Active Reading Approach: 3.2: Stock went up by 20% over 5 years. By what % per year?

# times growth factor occurs

3.4: Half?doubling life

APC: p. 161: #4 Cruise: How many in the past rather than future.

**p. 163 #10: Derive from table (Newton’s law of cooling with end behavior due to situation). Also on p. 165 and p. 169 (constant ratio among temperatures). Also p. 171: Find a, b, c with info. End behavior**

p. 163 #11: Drug in body.

p. 174 (HW): #4, 5.

3-4-3: The special number e

s-Z: p. 472: Via (1 + 1/n)^n. Put with rules to get cpd. Continuously.

APC: 3.3: derive e.

Calc- Medic 3.3 Develop e from more and more compoundings

In which equations would we need logarithms to solve it?