Math 125 Pre – Calculus
Kenny Shah, Fall 2017, 1.1-1.3

NAME: SOLUTIONS
CLASS TIME: 7&8 AM

QUIZ # 1

Please show all of your work for maximum credit. Good luck!!!

1. **Table below shows the daily low temperature for one-week period in New York City during July.**

Date	17	18	19	20	21	22	23
Low temp (°F)	73	77	69	73	75	75	70

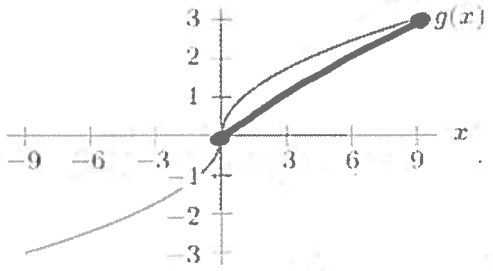
(a)(2 points) Is the daily low temperature a function of the date? Explain your reasoning.

Sol: Input: DATE & Output: DAILY LOW TEMP.
Daily low TEMP. is a function of the date because every value of date corresponds to exactly one value of temp.

(b)(2 points) Is the date a function of the daily low temperature? Explain your reasoning.

Sol: Input: Daily low TEMP. & Output: DATE
THE Date is not a function of the daily low temp. because $73 \begin{matrix} 17 \\ < \\ 20 \end{matrix}$.

2. **Figure below shows the graph of the function g(x).**



(a) (1 points) Estimate the average rate of change for g(x) from x = 0 to x = 9.

Sol: $\text{a.v.r.c}_{[0,9]} = \frac{g(9)-g(0)}{9-0} = \frac{3-0}{9-0} = \frac{3}{9} = \boxed{\frac{1}{3}}$

(b) (1 point) The ratio in part (a) is the slope of a line segment joining two points on the graph. Sketch this line segment on the graph.

Sol: See the graph.

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3. **The below table shows the Cost, C, in dollars, of selling x cups of coffee per day from a cart.**

x	0	5	10	50	100	200
C	50	51.25	52.5	62.5	75	100

(a) (2 points) Using the table, show that the relationship appears to be linear. Explain.

Sol. $\underset{[0,5]}{a.v.r.c.} = \frac{51.25-50}{5-0} = \frac{1.25}{5} = \boxed{0.25}$

$\underset{[5,10]}{a.v.r.c} = \frac{52.5-51.25}{10-5} = \frac{1.25}{5} = \boxed{0.25}$

$\vdots$

$\underset{[100,200]}{a.v.r.c} = \frac{100-75}{200-100} = \boxed{0.25}$

A.V.R.C. are CONSTANT.

(b) (2 points) Find the formula for the function. Interpret the slope and the y-intercept in terms of the problem.

Sol. $y = mx+b$

$y = 0.25x+50$

$\boxed{C(x) = 0.25x+50}$

The slope of $\frac{0.25}{1}$ represents the cost of selling 1 additional cup of coffee.

The y-intercept of 50 is the initial cost of producing 0 cups of coffee.