MATH 422 Math for Business Applications **Spring 2023**

Weekly Quiz #1 2/2/23 **Name**_____

Directions: Please answer the following questions to the best of your ability. Provide reasoning when asked. Each numbered question is worth 3 points. Quizzes will all be 15 points each.

1. Is this a function?

   Let x be the length of a person's foot in inches. Then the shoe size (y) is approximately $y = 3 * x - 22$ in mens' shoes. Most adult males have feet that measure between 9 inches and 12.5 inches.

   Is this a function? YES NO (Circle your choice)

Questions 2-5 are based on the following graph of average life expectancy in the United States:

Some key data points that you will need: (1860, 39.41) , (1865, 35.1) , (1900, 48.19) , (1940, 62.07) , (1980, 73.25) , (2015, 78.94) , (2020, 78.81)

2. What is the domain of this graph? _____ the range? _____

3. What is the average rate of change of life expectancy (per year) between **1865** and **2015**?

   _____ expected years of life per year

4. Has average life expectancy in the United States generally increased? Or decreased over time?

   Circle your choice: increased decreased

   How did you decide this?

5. Compare the average rate of change in the first 40 years (1860 – 1900) with the last 40 years (1980 – 2020). Has the growth *slowed down*? *Sped up*? About the same? (Choose one answer)

   1st 40 years avg rate of change _____

   last 40 years avg rate of change _____

   Choose ONE: rate of change has ____ slowed ____ sped up ____ stayed the same (constant)

REFERENCE SHEET

Formulas you may need:

Average rate of change of a function f(x) on an interval [a,b] is (f(b) – f(a)) ÷ (b-a)

Other ways of writing this formula: $\frac{f(b)-f(a)}{b-a} = \frac{\Delta y}{\Delta x} = (y_2 - y_1) \div (x_2 - x_1)$

Data and graph:

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