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

Weekly Quiz #1 9/7/23 **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? What is the expected domain and range?

Let *x* be the length of a person’s foot in centimeters. Then the European shoe size (*y*) is given by the equation in mens’ shoes. Nearly all adult males have feet that measure between 22 cm and 32 cm.

What is the domain? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is the range? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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)

1. What is x measuring? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is y measuring? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the **average rate of change** of life expectancy (per year) between **1865** and **2020**?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ expected years of life per year

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

Circle your choice: increased decreased

How did you decide this?

1. 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:

**Data and graph:**

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Chart, line chart

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