

Name: \_\_\_\_\_

**MATH 108**

**Spring 2023**

**HW 9: Due 03/08**

*“One of the first things taught in introductory statistics textbooks is that correlation is not causation. It is also one of the first things forgotten.”*

*– Thomas Sowell*

**Problem 1.** (10pt) Anwesh is comparing costs of homes in different areas. In a particular suburb, the house prices are approximately normally distributed with mean \$430,000 and standard deviation \$50,000. While in a particular rural area, the house prices are normally distributed with mean \$250,000 and standard deviation \$17,000. In which area would a house that costs \$290,000 cost more than the average house? Explain. In which area would a house that costs \$290,000 be more ‘unusual’? Explain.

**Problem 2.** (10pt) Suppose you have the normal distribution  $N(224, 46.9)$ . Let  $X$  be a value randomly drawn from this distribution. Showing all your work, compute the following:

- (a)  $P(X = 220)$
- (b)  $P(X < 200)$
- (c)  $P(X < 300)$
- (d)  $P(X > 300)$
- (e)  $P(200 < X < 300)$
- (f) The value  $Y$  that 'marks' the largest 8% of values for this distribution.