MTH 154, Quiz #9, Spring 2023 Name _____

Instructions: You must show all work to receive full credit for the problems below. You may use Excel where appropriate. Any datasets needed will be posted on Canvas with the quiz file, and you should submit such work along with your quiz. Round answers to two decimal places unless other instructions are given in the problem. Do not say "see Excel". Paste your answers into the quiz.

1. The quadratic formula $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ is used to solve an equation of the form $ax^2 + bx + c = 0$. Write a formula in Excel to solve any formula of this type using cell references, so that someone just needs to enter the coefficients of the equation in the appropriate boxes. Then use your formula to solve the equation $3x^2 + 17x - 13 = 0$. If your solutions are decimals, round your answer to 4 decimal places. Be sure that your calculations can find both solutions.

$-6.349171 \Rightarrow -6.3492$

$0.682504 \quad\quad 0.6825$

2. A sample of 50 people is taken, and the mean is determined to be 30.2, with a standard deviation of 7.6. If the standard error is $SE = \frac{SD}{\sqrt{n}}$, find the standard error.

$\frac{7.6}{\sqrt{50}} = 1.0748$

3. The standard score is $Z = \frac{X-\mu}{\sigma}$. Two friends are comparing their exam results in the same course on exams given by different instructors. Rashida's class has a mean of 203 points with a standard deviation of 23 points. Jeremiah's class has a mean of 73 with a standard deviation of 12. Rashida got a 221, and Jeremiah got an 84. Which student did better on the exam?

$z_{Rashida} = 0.78\ldots$

$z_{Jeremiah} = 0.916\ldots$

Jeremiah did better

4. A sample of 1120 is taken and the proportion of those who have heard of the test product is 32%. The formula for the standard error of proportions is $SE = \sqrt{\frac{p(1-p)}{n}}$. What is the standard error for this sample?

0.013939

or 1.4%