MTH 261, Quiz #1, Spring 2024          Name _____

**Instructions**: You must show all work to receive full credit for the problems below.  You may check your work with a calculator, but answers without work will receive minimal credit.  Use exact answers unless the problem starts with decimals or you are specifically asked to round.

1.  A function is given by $f(x) = -x^2 - 2x + 3$.  Find the values of $f(-3)$ and $f(a + h)$.

2.  Find the slope of the line containing the points $(-8,3)$ and $(4, -3)$.

3.  Graph $f(x) = \frac{x^2-4}{x-2}$.  State the domain and range in interval notation.  Identify any holes, intercepts, or asymptotes.

4. Graph $f(x) = \begin{cases} x^2 + 1, for\ x \geq 0 \\ x - 2, for\ x < 0 \end{cases}$.

5. For the function $f(x, y) = \ln(e^x + 1) + 7xy$, find $f(0, -2), f(-2,1), f(2,1)$.

6. State the domain and range of the function $f(x, y) = \sqrt{x + 2y}$. Write your domain in set notation, and the range in interval notation.