MTH 261, Quiz #0, Spring 2019 Name KEY

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 $f(x) = -x^2 + 5$. Find the values of $f(-3)$ and $f(a+h)$.

$f(-3) = -(-3)^2+5 = -9+5 = -4$

$f(a+h) = -(a+h)^2+5 = -a^2-2ah-h^2+5$

2. Find the slope of the line containing the points $(-9,2)$ and $(3,-4)$.

$$m = \frac{2-(-4)}{-9-3} = \frac{6}{-12} = -\frac{1}{2}$$

3. Graph $f(x) = \frac{x^2-1}{x+1}$. State the domain and range in interval notation. Identify any holes, intercepts, or asymptotes.

$f(x) = \frac{(x+1)(x-1)}{x+1} = x-1$

hole @ $x=-1$

domain $(-\infty,-1)\cup(-1,\infty)$

range $(-\infty,-2)\cup(-2,\infty)$

x-int $x=1$ $(1,0)$

y-int $y=-1$ $(0,-1)$

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