Put answers in spaces provided unless otherwise stated. SHOW ALL WORK. (No Work = No Credit)
Remember that you lose points for sloppy work, not following directions, and unclear answers.
Simplify answers completely.

(6 points)
1. Determine whether or not each given graph is a graph of a function. If it is not, state why.

a. Not a function (ND)
   - Fails VLT

   b. Function (YES)

(6 points)
2. Determine the domain of the function and state your answer in interval notation.

\[ g(x) = \frac{\sqrt{x+2}}{x-4} \]

\[ x+2 \geq 0 \quad \Rightarrow \quad x \geq -2 \]
\[ x-4 \neq 0 \quad \Rightarrow \quad x \neq 4 \]

Domain: \((-2, 4) \cup (4, \infty)\)
5. Given $f(x) = 3x^2 + 1$, find and simplify the following. SHOW ALL WORK for credit.
   
   a. $f(2) = 3 \cdot 2^2 + 1 = 3 \cdot 4 + 1 = 12 + 1 = 13$

   b. $f(p)$

   c. $f(x + h) = 3(x + h)^2 + 1 = 3(x^2 + 2xh + h^2) + 1$

   d. $\frac{f(x + h) - f(x)}{h} = \frac{(3x^2 + 6xh + 3h^2 + 1) - (3x^2 + 1)}{h}$
   
   $= \frac{3x^2 + 6xh + 3h^2 + 1 - 3x^2 - 1}{h}$

   $= \frac{6xh + 3h^2}{h}$

   $= \frac{h(6x + 3h)}{h}$

   $= 6x + 3h$