Math 124 Quiz #1
September 30, 2008

Name: _____

Show all work.

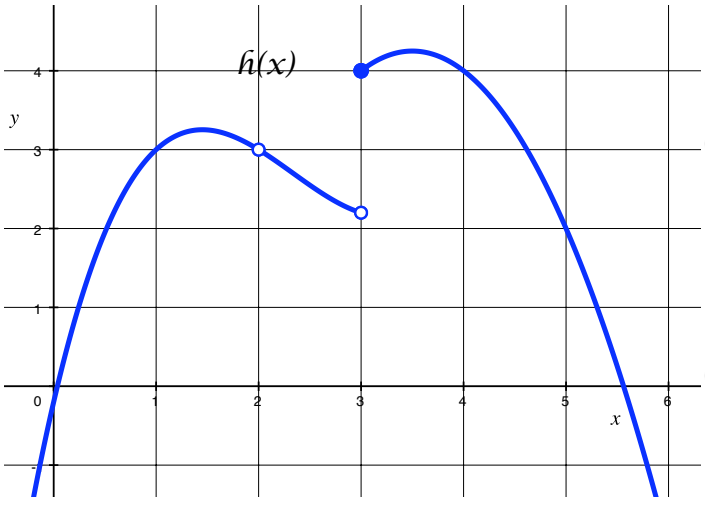
1. (2 pts.) Find the domain of $f(x) = \frac{x+1}{x^2-4}$.

2. (2 pts.) For the function $g(x) = 2x^2$, simplify the following expression: $\frac{g(3+h) - g(3)}{h}$

3. (2 pts.) The function $f(x)$ is piecewise-defined as $f(x) = \begin{cases} 3x^3 - 1 & \text{if } x \leq 0 \\ x + 4 & \text{if } x > 0 \end{cases}$. Find $f(1)$.

$f(1) =$ _____

4. (4 pts.) Evaluate the following quantities for the given piecewise-defined function $h(x)$. If a limit does not exist, indicate this.



(a) $\lim_{x \to 2} h(x)$

(b) $\lim_{x \to 3} h(x)$

(c) $\lim_{x \to 3^+} h(x)$

(d) $h(3)$