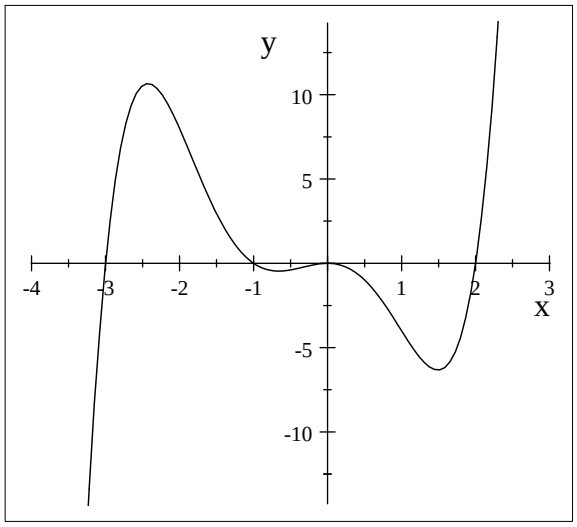
Math 131 - Spring, 2008 Homework 1 Due Friday, Jan 11 Name: _____

Mathematics Quote: *I consider that I understand an equation when I can predict the properties of its solutions, without actually solving it. — Dirac*

1. Give the domain of each function. Specify the domain in interval notation.

(1) $f(x) = \dfrac{x+1}{x^2-2}$ (2) $g(x) = 3\sqrt{2x+1}$ (3) **Extra points**: $h(x) = \sqrt{x^2-2}$

2. The graph of $f(x)$ is given below.



(1) a. $f(-3) =$ b. $f(-1) =$
(2) State the interval(s) on which $f(x) < 0$.
2. Give the domain (in interval notation)
of $g(x) = \dfrac{1}{f(x)}$.

3. Are functions $f(x) = x + 2$ and $g(x) = \dfrac{x^2-4}{x-2}$ the same? If your answer is yes, explain why. If your answer is no, specify the difference between $f(x)$ and $g(x)$.

4. (i) Complete the following table by a calculator with at least 8 decimal digits:

x	$\dfrac{x^2-1}{x+2}$	$\dfrac{x^2-1}{x-1}$	$\dfrac{x^2-2}{x-1}$
0.999			
0.9999			
0.99999			
0.999999			

(ii) Based on the results obtained in the table, find numerically the limits

$\lim\limits_{x\to 1^-} \dfrac{x^2-1}{x+2} =$ $\lim\limits_{x\to 1^-} \dfrac{x^2-1}{x-1} =$ $\lim\limits_{x\to 1^-} \dfrac{x^2-2}{x-1} =$

5. Assignment for Section 1.2. Turn in the ones with $*$.

a. Page 85: 1, $*$2(a)(b)(c)(f)(g)(h)

b. **Extra points** - Page 86: 20