Math 229
Limits Worksheet
06/05/2008

Name:_____

1. For each of the following functions, first complete the table and then, based on the table, find the given limits. If a limit does not exist, write "DNE".

(a) $f(x) = \dfrac{x^2 - x - 6}{x - 3}$

x	2.9	2.99	2.999	2.9999	3.1	3.01	3.001	3.0001
$f(x)$								

$\lim_{x \to 3^-} f(x) =$ $\lim_{x \to 3^+} f(x) =$ $\lim_{x \to 3} f(x) =$

(b) $f(x) = \dfrac{|x - 3|}{x - 3}$

x	2.9	2.99	2.999	2.9999	3.1	3.01	3.001	3.0001
$f(x)$								

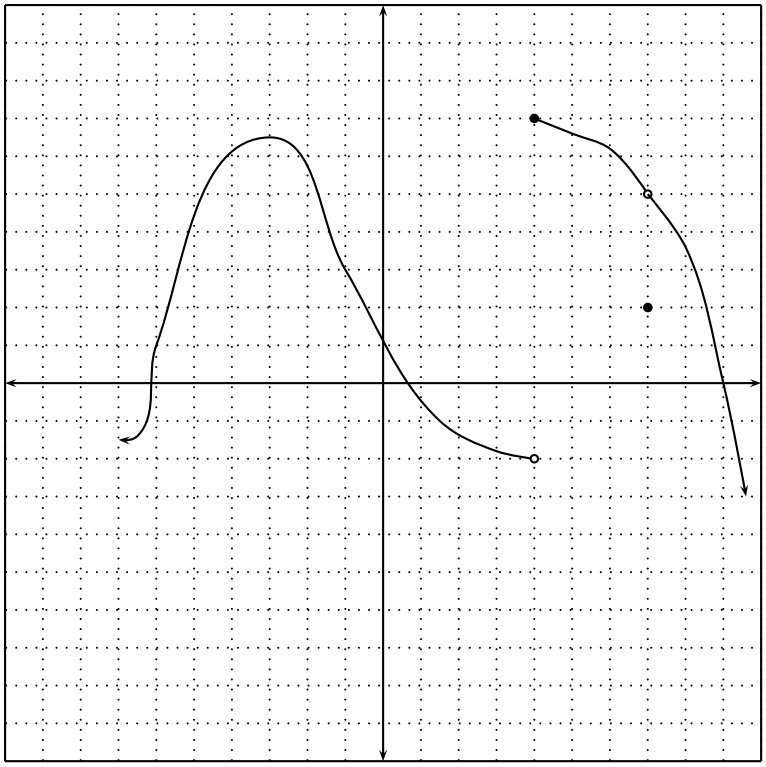
$\lim_{x \to 3^-} f(x) =$ $\lim_{x \to 3^+} f(x) =$ $\lim_{x \to 3} f(x) =$

(c) $f(x) = \dfrac{1}{x^2}$

x	-0.1	-0.01	-0.001	-0.0001	0.1	0.01	0.001	0.0001
$f(x)$								

$\lim_{x \to 0^-} f(x) =$ $\lim_{x \to 0^+} f(x) =$ $\lim_{x \to 0} f(x) =$

2. Use the following graph to find each of the following. If a limit does not exist, write "DNE".



(a) $f(-1)$

(c) $\lim_{x \to 4^+} f(x)$

(e) $f(7)$

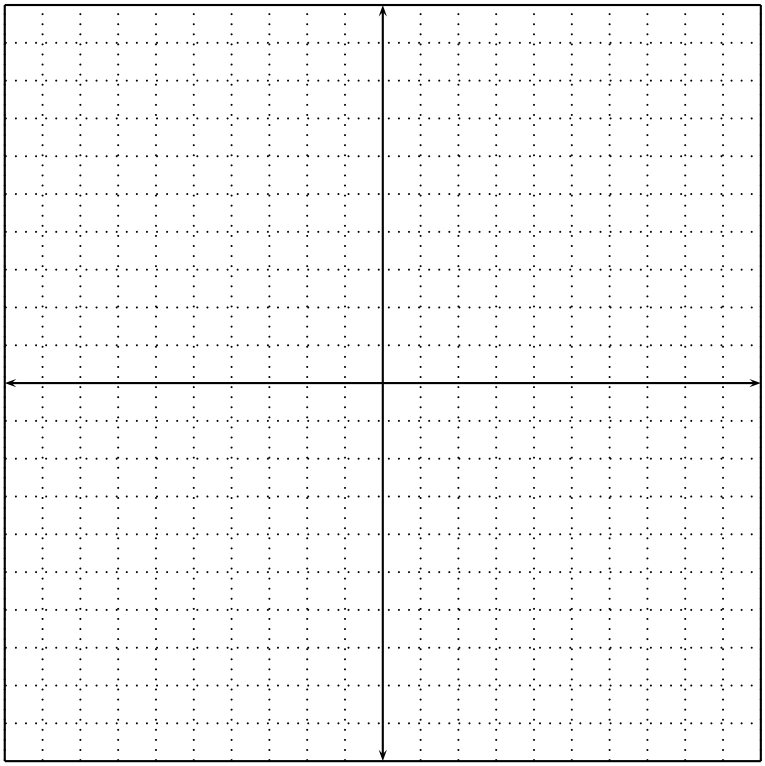
(b) $\lim_{x \to 4^-} f(x)$

(d) $\lim_{x \to 4} f(x)$

(f) $\lim_{x \to 7} f(x)$

3. Let f be the function defined by $f(x) = \begin{cases} -x+3 & \text{if } x < 2 \\ 3 & \text{if } x = 2 \\ -x^2+6x-3 & \text{if } x > 2 \end{cases}$

(a) Sketch the graph of f.



(b) For each of the following, find the limit if it exists. If the limit does not exist, write "DNE".

$\lim_{x \to 2^-} f(x)$

$\lim_{x \to 2^+} f(x)$

$\lim_{x \to 2} f(x)$

4. For each of the following, find the limit if it exists; if the limit does not exist, write "DNE".

(a) $\lim_{x\to 5} x$

(b) $\lim_{x\to 5} 7$

(c) $\lim_{x\to 4} \dfrac{x^2-6x+5}{x^2-9}$

(d) $\lim_{x\to 9} \dfrac{x-9}{\sqrt{x}-3}$

(e) $\lim_{x\to -7} \dfrac{\sqrt{x+7}}{x+4}$

(f) $\lim_{x\to -3} \dfrac{x^4-16}{x-4}$

(g) $\lim_{x\to 5} \dfrac{\frac{1}{x}-\frac{1}{5}}{x-5}$

(h) $\lim_{h\to 0} \dfrac{(x+h)^2-x^2}{h}$