

Math 1496 Calc 1 - Homework #2

Pg. 79, #5, 6, 10, 11, 13, 15, 17, 19

Pg. 80, #27, 31

Pg. 91, #47, 51, 53,

Pg. 92 # 75, 76

Pg. 79

In these exercises, complete the table and estimate the limit

#5 $\lim_{x \rightarrow 4} \frac{x - 4}{x^2 - 5x + 4}$

x	3.9	3.99	3.99	?	4.001	4.01	4.1
$f(x)$							

#6 $\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x}$

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

#10 $\lim_{x \rightarrow 0} \frac{\ln(x+1)}{x}$

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

In the following, evaluate both numerically and graphically.

#11 $\lim_{x \rightarrow 2} \frac{x - 2}{x^2 + x - 6}$

#13 $\lim_{x \rightarrow 1} \frac{x^4 - 1}{x^6 - 1}$

#15 $\lim_{x \rightarrow -6} \frac{\sqrt{10 - x} - 4}{x + 6}$

#17 $\lim_{x \rightarrow 0} \frac{\sin 2x}{x}$

#19 $\lim_{x \rightarrow 2} \frac{\ln x - \ln 2}{x - 2}$

Pg. 80

From the graph (they are in the book), determine the limit or value

#27 $\lim_{x \rightarrow 2} \frac{|x - 2|}{x - 2}$

#31 (a) $f(1)$ (b) $\lim_{x \rightarrow 1} f(x)$ (c) $f(4)$ (d) $\lim_{x \rightarrow 4} f(x)$

#33 Find the value of c for which $\lim_{x \rightarrow c} f(x)$ exists.

$$f(x) = \begin{cases} x^2, & x \leq 2 \\ 8 - 2x, & 2 < x < 4 \\ 4, & x \geq 4 \end{cases}$$

Pg. 91 Find the limit of the following analytically

$$\#49 \quad \lim_{x \rightarrow 4} \frac{x - 4}{x^2 - 16}$$

$$\#51 \quad \lim_{x \rightarrow -3} \frac{x^2 + x - 6}{x^2 - 9}$$

$$\#53 \quad \lim_{x \rightarrow 4} \frac{\sqrt{x + 5} - 3}{x - 4}$$

Pg. 92 Find the limit of the following analytically

$$\#75 \quad \lim_{x \rightarrow 0} \frac{\sin 3x}{2x}$$

$$\#76 \quad \lim_{x \rightarrow 0} \frac{\sin 2x}{\sin 3x}$$

Pg. 92 #79 Find the limit of the following numerically, graphically and analytically

$$\lim_{x \rightarrow 0} \frac{\frac{1}{2+x} - \frac{1}{2}}{x}$$