

Name: _____

SECTION
(odd)

PROBLEMS

1.2

1, 3, 15-23

1.3

1-63, 65-75

1.4

1-21, 35-53, 63-67

Answer the following. Show your work for full credit.

1. Compute the following limits:

- (a) $\lim_{x \rightarrow 4} \frac{x-4}{x^2-3x-4}$
 (b) $\lim_{h \rightarrow 0} \frac{(1+h)^2-1}{h}$
 (c) $\lim_{h \rightarrow 0} \frac{(x+h)^2-x^2}{h}$
 (d) $\lim_{x \rightarrow 4} \frac{x-4}{x^2-3x-4}$
 (e) $\lim_{x \rightarrow -1} \frac{x^2-x-2}{x^2+3x+2}$
 (f) $\lim_{x \rightarrow 16} \frac{4-\sqrt{x}}{x-16}$
 (g) $\lim_{x \rightarrow 2} \frac{\sqrt{x+2}-\sqrt{2x}}{x^2-2x}$
 (h) $\lim_{x \rightarrow 0} \frac{\frac{1}{2+x}-\frac{1}{2}}{x}$

2. Compute the following limits:

- (a) $\lim_{\theta \rightarrow 0} \frac{5 \cos \theta \sin 3\theta}{2\theta}$
 (b) $\lim_{x \rightarrow 0} \frac{\sin 2x}{5x}$
 (c) $\lim_{x \rightarrow 0} \frac{\sin x}{\sin 5x}$
 (d) $\lim_{x \rightarrow 0} \frac{2x}{\tan x}$

3. Compute the following limits:

- (a) $\lim_{x \rightarrow 2^-} \frac{x}{x^2-4}$ (b) $\lim_{x \rightarrow 5^-} \frac{|x-5|}{x-5}$

4. Let

$$f(x) = \begin{cases} x^2 & \text{if } x < 1 \\ 5 - x^2 & \text{if } 1 \leq x < 2 \\ \sqrt{x^2 - 4} & \text{if } x \geq 2 \end{cases}$$

- Find (a) $\lim_{x \rightarrow 1^-} f(x)$ (b) $\lim_{x \rightarrow 1^+} f(x)$
 (c) $\lim_{x \rightarrow 2^-} f(x)$ (d) $\lim_{x \rightarrow 2^+} f(x)$.