

Name: _____
Period: _____

Homework for Section 5.1

P. 198: 1-9 odd Identify each x -value at which any extreme value occurs.

Label each as absolute maximum, relative maximum, absolute minimum, or relative minimum.

(Note: Answers in the back of the book are only for ABSOLUTE extrema)

1. 7.

3. 9.

5.

P. 197: 5-8 all Match each table with the graphs.

5. 6. 7. 8.

State the **5 steps** we used in each problem of the class notes to determine the extrema for each function:

1.

2.

3.

4.

5.

Write down the **Extreme Value Theorem** (p. 192), then draw two graphs that demonstrate the EVT.

- Find the extreme values of each function and where they occur.
- Also, indicate if there is *not* a maximum or minimum for the function.
(You must use the five step method demonstrated in the class lecture.)

1. $f(x) = 2x^2 - 8x + 9$

a) Domain:

b) $f'(x) =$

c) Critical Points

$f'(x) = 0$

$f'(x) = \text{undef.}$

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.

2. $g(x) = x^3 - 27x + 4$

a) Domain:

b) $g'(x) =$

c) Critical Points

$g'(x) = 0$

$g'(x) = \text{undef.}$

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.

3. $q(x) = \cos x$ on $\left[\frac{\pi}{2}, 2\pi\right]$

a) Domain:

b)

c) Critical Points

_____.

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.

4. $y = e^{-x}$ on $-1, 1$

a)

b)

c) Critical Points

_____.

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.

5. $y = \begin{cases} 4 - 2x & -3 < x \leq 1 \\ x + 1 & x > 1 \end{cases}$

a)

b) $\frac{dy}{dx} = \begin{cases} & -3 < x \leq 1 \\ & x > 1 \end{cases}$

c) Critical Points

_____.

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.

6. $h(x) = \sqrt{9 - x^2}$

a) Domain:

b)

Simplify your derivative

c) Critical Points

_____.

d) Number Line

e) Answer

f) Draw a graph of the function with a graphing calculator to confirm your findings.