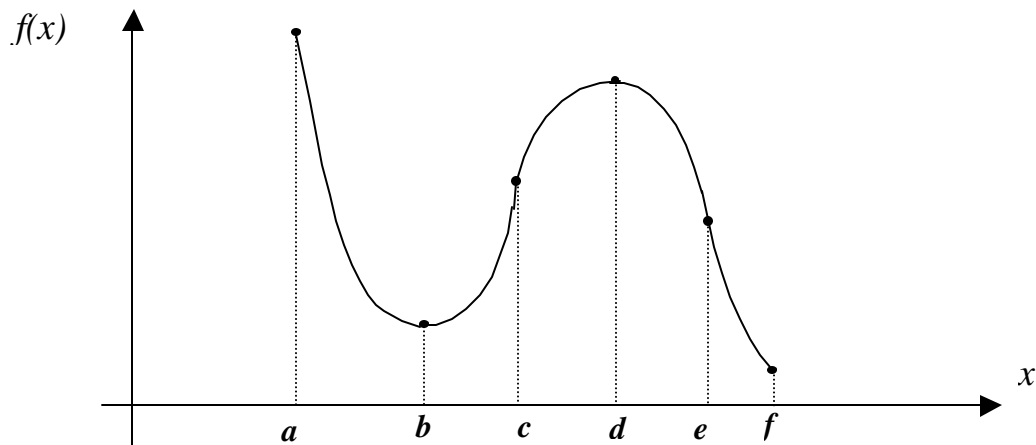


## Graphs Review Sheet

**Example 1:** Consider the graph  $f(x)$  shown below:



Relative Max at:  $x = \underline{\hspace{2cm}}$  ; Relative Min at  $x = \underline{\hspace{2cm}}$

Absolute Max at:  $x = \underline{\hspace{2cm}}$  ; Absolute Min at  $x = \underline{\hspace{2cm}}$

Critical points at:  $x = \underline{\hspace{2cm}}$  ;  $f''(x) = 0$  at:  $x = \underline{\hspace{2cm}}$

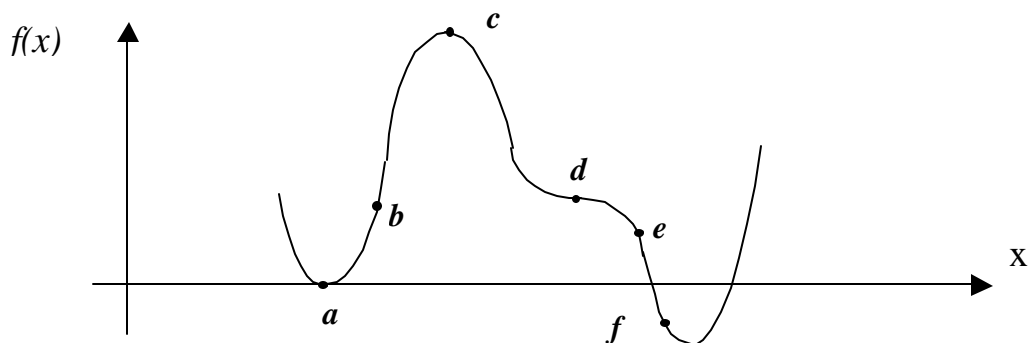
$f'(x) = 0$  at:  $x = \underline{\hspace{2cm}}$

$f'(x) > 0$  at the interval of:  $\underline{\hspace{2cm}}$  ;  $f'(x) < 0$  at the interval of:  $\underline{\hspace{2cm}}$

$f''(x) > 0$  at the interval of:  $\underline{\hspace{2cm}}$  ;  $f''(x) < 0$  at the interval of:  $\underline{\hspace{2cm}}$

$f''(x) > 0$  &  $f'(x) = 0$  at:  $x = \underline{\hspace{2cm}}$  ;  $f''(x) < 0$  &  $f'(x) = 0$  at:  $x = \underline{\hspace{2cm}}$

**Example 2:** Consider the graph  $f(x)$  shown below:



	$f$ is: (+, 0, -)	$f'$ is: (+, 0, -)	$f''$ is: (+, 0, -)
$a$			
$b$			
$c$			
$d$			
$e$			
$f$			

## Answers:

Please ask your instructor if you don't agree with an answer, you might be correct

### Example 1:

Relative Max at:  $x = d$

Relative Min at  $x = b$

Absolute Max at:  $x = a$

Absolute Min at  $x = f$

Critical points or :  $f'(x) = 0$  at:  $x = b, d$

$f''(x) = 0$  (Inflection points) at:  $x = c, e$

$f'(x) = 0$  (Tangent line is horizontal) at:  $x = b, d$

$f'(x) > 0$  (Increasing) at the interval of:  $(b < x < d)$

$f'(x) < 0$  (Decreasing) at the interval of:  $(a < x < b)$  and  $(d < x < f)$

$f''(x) > 0$  (Concave Up) at the interval of:  $(a < x < c)$  and  $(e < x < f)$

$f''(x) < 0$  (Concave Down) at the interval of:  $(c < x < e)$

$f''(x) > 0$  &  $f'(x) = 0$  at (local Minimum):  $x = b$

$f''(x) < 0$  &  $f'(x) = 0$  at (local Maximum):  $x = d$

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### Example 2:

	$f$ is: (+, 0, -)	$f'$ is: (+, 0, -)	$f''$ is: (+, 0, -)
$a$	0	0	+
$b$	+	+	+
$c$	+	0	-
$d$	+	0	0
$e$	+	-	-
$f$	-	-	+

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