Chapter 3 Topics

Critical Numbers

Absolute Extrema

Rolle's Theorem

Mean Value Theorem

Relative Extrema

Intervals of increasing/decreasing

First Derivative Test

Second Derivative Test

Intervals of concavity

Points of Inflection

Curve Sketching

Optimization

Linear Approximation

Motion on a line (see page 2)

Remember to look over your notes and worksheets too!

Remember to make derivatives "useful"

What you need to know about motion…

When you see….	**Think…**
Initially	$t = 0$
At rest	$v(t) = 0$
Particle moving right (forward or up)	$v(t) > 0$
Particle moving left (backward or down)	$v(t) < 0$
Instantaneous velocity at time $t = a$	$v(a) = x'(a)$
Acceleration at time $t = c$	$a(c) = v'(c) = x''(c)$
Velocity is increasing	$a(t) = v'(a) > 0$
Velocity is decreasing	$a(t) = v'(a) < 0$
Speed is increasing	$v(t)$ and $a(t)$ have same sign (both + or both -)
Speed is decreasing	$v(t)$ and $a(t)$ have different signs