Calculus AB

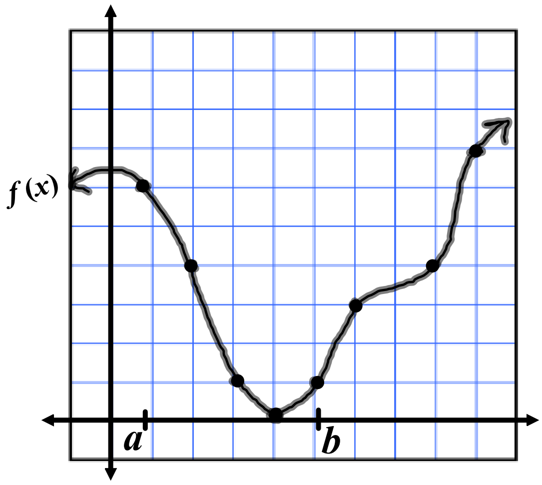
1-4

(Day 2)

Intermediate Value Theorem

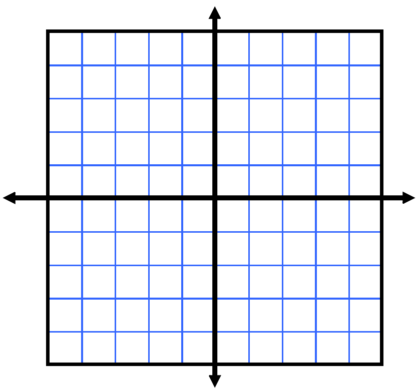
Intermediate Value Theorem -

If a function f is continuous on $[\, a, b \,]$ and $k \in [\, f(a),\ f(b) \,]$, then there exists a number $c \in [\, a, b \,]$ such that $f(c) = k$.



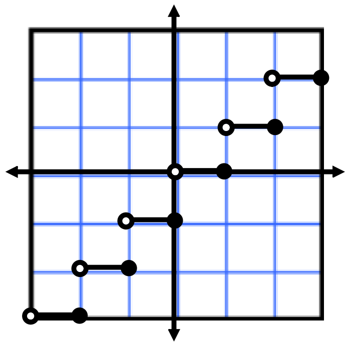
Where will we ever use this? (We already have! In Alg II...)

Suppose we have the continuous function $y = \frac{1}{4}x^3 - 11$ and $f(3) = -4.25$ and $f(4) = 5$. What can I assume must happen between $x = 3$ and $x = 4$?



Greatest Integer function -

$$f(x) = [\![x]\!]$$



$\lim_{x \to 2^+} f(x) =$

$\lim_{x \to 2^-} f(x) =$

$\lim_{x \to 2} f(x) =$

Describe the continuity of $f(x)$.

How do we get this on the graphing calculator?

Find the limit (if it exists). If it does not, explain why. (pg 76)

old book 21) $\lim_{x \to 4^-} \left(3[\![x]\!] - 5\right)$

Explain why the function has a zero in the specified interval.

84) $f(x) = x^3 + 5x - 3, \ [0, 1]$

Verify that the Intermediate Value Theorem applies to the indicated interval and find the value of c guaranteed by the theorem.

92) $f(x) = x^2 - 6x + 8, \ [0, 3], \ f(c) = 0$

Assignment:
Pg. 79
23 - 26 all,
59, 60,
63 - 71 odd,
77 - 80 all,
83, 91, 93,
95 - 97 all,
107, 114