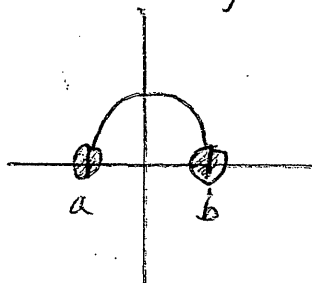


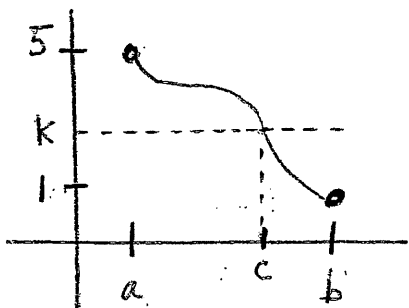
Ch. 1.4b Notes on Continuity continued

A. Continuity on a closed interval: If a function is continuous on an open interval (a, b) and $\lim_{x \rightarrow a^+} f(x) = f(a)$ and $\lim_{x \rightarrow b^-} f(x) = f(b)$, then function is continuous on closed interval $[a, b]$



B. Intermediate Value Theorem (IVT)

If f is continuous on a closed interval $[a, b]$ and k is any number between $f(a)$ and $f(b)$, then there is at least one number c in $[a, b]$ such that $f(c) = k$.



* In other words, if a function is continuous then it has to hit all the y-values between the endpoints.

Ex. 1 Use IVT to show there is a zero ($y=0$) in the interval $[0, 1]$ for $f(x) = x^3 + 2x - 1$.

Ex. 2 Verify that IVT applies to $f(x) = \frac{x^2+x}{x-1}$ on interval $[\frac{5}{2}, 4]$ for $f(c) = 6$. Then find c .