	HWb
	Collaborators: Xi Liu, Cerina Yao
1.(0)	f is continuous at c, so YE>0, 35>0 s.t.
	YXES, x-c <8, then f(x)-f(c) <8
	so YN'EA. In'-cl <s acs<="" n'es="" since="" td="" ⇒=""></s>
	3>(c) f(c) f(c) f(c) =
	so that is continuous at c. (0) (2.2-)
10.14	A (m) - L. 14 5 - + O = (m) 1 m 1 - 3
(P)	f(x)={ if x is rational
	10 if n is irrational
	S=R, A=Q, c=0 (=) - f(1)
25/37	When nEA, f(n)=1, so YE>0, 75=1 st 5
	YNEA, IN-C/< S, then If(n)-f(c) = 0 < 8 (1)
	so + A is continuous at c
13 at 1	We prove in class that f is not sat
the ment of the	bell it hab, matter of a Ald a Hid
(c)	AlA is continuous at c, 50 75>0, 75>0 st
and the second s	Tre(c-a, c+a), r-c/c &, then f(x)-f(c)/< 8
	35= min(a, 5) st.
Charles Trace	TRES, IN-C/cs => ME(C-X C+X) M-C/cs
Mixia-	then 1f(x)-f(c))< {
	so f is continuous at c
100	the composition of algebraic some time have the market
	Story to second as (x) of evolvedt
Account of the same of the sam	

2. By Min-Max Theorem, f. [a, b] -> R achieves both an absolute min M and an absolute max N on [a, b] If M=N, then f[(a,b)] is a single number M. If M<N, suppose f(m)=M, f(n)=N, m < n, by Bolzano's IVT, yeRst. Mcy<N, then ∃c∈(m,n) s.t. f(c)=y
so f[(a,b)] = [M,N] is a closed and bounded interval $f(y) - f(x) = y^n - x^n = (y - x)(y^{n-1} + y^{n-2}x + \cdots + x^{n-1}) > 0$ so f(y)>f(x) so f is strictly increasing for all nEN so $\forall x < y$, $f(x) \neq f(y)$ since f(x) < f(y)so f is injective (b) YneN, Yce[O,M], V5>0, 35=min (M, E), VNES, N-c/c) |f(n)-f(c)|= |n'-c"| < | (c+S) - c"| = S(Cn-1+Ch-25+--+5n-1) $= n \leq M^{n-1} + \cdots + M^{n-1}$ $= n \leq M^{n-1} < n \cdot \frac{\xi}{n M^{n-1}} M^{n-1} = \xi$ so f is continuous

f(0)= 0, f(M)= M", by Bolzano's IVT. Ty ER st. 0< y< M",

Ice[0,M] st. f(c)= y => f[0,M] is surjective

also f is injective by (a) => f[0,M] is bijective

(c)	Yacio, s), JMEN st. M">a
	Since flooms is bijective and aclo, M'),
	there exists a unique $x \in [0, M]$ s.t $x^n = a$.
[17] Harry	and many Mainte Mintack areason Wall time
4.	bd-1 nd-1 + + n+ bo = bd-1 nd-1 + + b. n+ bo
	to be had been to be a first of his one
	1bd-1hd-1++ (b) lnd-1+ (b) lnd-1
	and and an artifal E
0 < (170)	$=\frac{1}{n}(bd1 +\cdots+ b_1 + b_0)$
	50 lim bd. nd-1++bn+bo = 0 lim bd-1 nd-1+bo = 0
	h→∞ hd h→-∞ hd
	50] M = N s.t. bd-1 M d-1 + - + b M + bo Since of is even
	M>0
	so g(M)>0
	similarly, FINEN, N<0 st. g(N)>0
	By Bolzano's IVM, 9 is continuous on [N, D] [O, M]
	$g(0)<0< g(N) \Rightarrow \exists G \in (N,0) \text{ s.t. } g(G)=0$ $g(0)<0< g(M) \Rightarrow \exists G \in (0,M) \text{ s.t. } g(G)=0$
	9(0)<0<9(M) => 3 cse(0,M) st. g(cs)=0
	50 we find C1 = C2 s.t. 9(C1)=9(C2)=0
2 =	MARTINE SALE MARTINE
reserve of	
145050	Le Dirt TVI is not of the Mistral Control
	and since in control is provided to the provided of the
	extrapolar contit c'in ad a responsibilità

6.	1 h(x)-h(c) = 1 df(x)+Bg(x)-af(c)-Bg(c) x=c x-c x=c x=c
	$= \lim_{n \to c} \left[\frac{f(n) - f(c)}{n - c} + \frac{g(n) - g(c)}{n - c} \right]$
•	= \(\lim \f(\pi) - \f(\c) + \\ \lim \f(\pi) - \f(\c) \\ \pi \c \pi - \c \pi - \c \pi - \c \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qqq \qquad \qq
	$= \propto f'(c) + \beta g'(c)$
	so his differentiable at c and h'(c) = xf'(c) + Bg'(c)
• 7.	h(x) - h(c) = f(x)g(x) - f(c)g(c)
	x-c
	= f(x)g(x) - f(c)g(x) + f(c)g(x) - f(c)g(c)
	≫-c
	f(x) - f(c) + f(c) = g(x) - g(c)
	= g(x) + f(c) + f(c) + g(x) - g(c) $= g(x) + f(c) + f(c) + g(x) - g(c)$
	lim h(x)-h(c) = lim g(x) lim f(x)-f(c) + f(c) lim g(x)-g(c) x>c x-c x-c x-c
	= q(c)f'(c) + f(c)g'(c)
	so h is differentiable at c and
	h'(c) = f(c)g'(c) + f'(c)g(c)

ξ	f(x)-f(c) = 4x-4c = -4x-4c = -1
0.	N-C N-C (1/20 +/C) (1/20-1C) 1/20 +/C
	$f(\infty) - f(c) - f(c)$
	MAC M-C MACIMATE
	= lim = lor all ce(0, x)
	so f is differentiable at all CE(0, x)
(-	rel+trifus =(s) il ha sto eldritus estit sille
	===
	= 1 hand - (s) d(s) f= (n) p(x) 2) (s) H = (n) 1
	7-X 2-X 2-X
(3h	and a complete the configuration of the configurati
*	3-X
	cd 2101-0000, 27, 1017-1017-1017-
	2-12-X1 2-X
1 - M - 1	(114-(X)) (114-(
	400 - 401 - 1-19 + 1500 F 100 P -
	es me find (+ 12 think in the validadh of 4th of 11 m)
	(a) (a) (a) (a) (a) (a) (a) (b) (b)