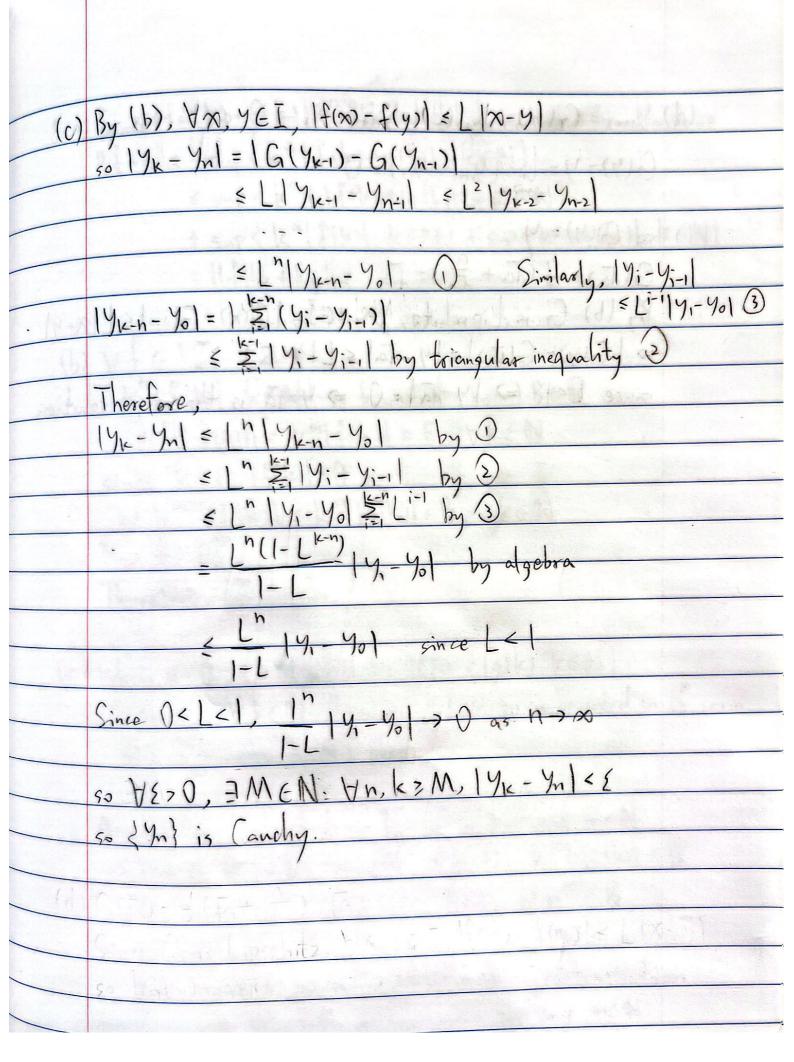
	Final
tia	G is continuously differentiable.
	1. $f(y) - f(c) = \frac{1}{2}(y+\frac{a}{2}) - \frac{1}{2}(c+\frac{a}{2})$ (use $y'=1$ )
	$\frac{f(y) - f(c)}{y - c} = \lim_{y \to c} \frac{\frac{1}{2}(y + \frac{a}{3}) - \frac{1}{2}(c + \frac{a}{2})}{y - c} $ (\(\frac{1}{3})' = -\frac{1}{4}\)
	instead
	- hm 2 2/2 2 202
	so $G'(y) = \frac{1}{\Sigma} - \frac{\alpha}{2y^2}$ is continuous
	Gis continuously differentiable.
	When yeta,
	When $y < \sqrt{a}$ , $G'(y) < \frac{1}{2} - \frac{a}{2(\sqrt{a})^2} = 0$
	When Y>Ta,
	$G'(y) > \frac{1}{z} - \frac{\alpha}{2(\sqrt{n})^2} = 0$
	exercise transcere this converses withings to first
	By 0, y < Ja, G(y) > G(Ja)
	By 2, 4> Ja, G(y) > G(1a)
	so G achieves an abs min at 4-10
-	DITANX-OLE - Exelocal
(P)	
	YN, YEI, WAR CONTRACT
	f(x)-f(y) =  =(x+常)-=(y+部) == (x-y)+(常-台)
	If N>Y, N-Y20, A-9=0 => =\ \( (x-y) + (\frac{1}{2} - \frac{1}{2}) \)
	< < >



(d	) Yn+1 = G(yn), by (c) Yn+1- Yn -> 0 as n -> 0
	G(4)- y= lim (4nt, -4n)=0
	The state of the s
	50 G(4)=4
	G(Ta) = \frac{1}{2}(Ta + \frac{1}{7a}) = Ta
Export at	By (b) G is Lipschitz, UM, YEI, G(X)-G(y)   \[ \lambda \lambda - y \]
	=>  G(y)-G(ta) =  y-ta  = L y-ta)
	since L<1 =>  y-tal=0 => y=ta is the unique solution
	and 104-11/11 = Int -11/11
	When yells, (3 id 1-1x-1x1) = "12" 12
	G1-12-2-2 は01書はリーメナツ」
	1 ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1 ) ( 1
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	STATE OF THE PROPERTY OF THE P

b.(a)	Since If(k)+g(k)  <  f(k) + g(k)  for all kell, we have
	11++9/10 = sup < K 1+(K)+9(K) - KEN)
	< sup < ka (1f(k)+19(k)); k (N)
	= sup < kalf(k)1: kEIN) + sup < kalg(k)1: kEIN)
	= 11flx + 11gllx home of wart
	- The state of the
(b)	Atelm,
	K   f(k)  : kEN) is bounded, so BER
	since k=1, 18(k) 1=0
	=> km-1  f(k)   = km  f(k)   < B, ykeN
	=> f ∈ [m-1]
	Therefore, I'm < I'm-1.
	Let Eso be explained one tel
(c)	When d=0, {kx19(k)1:kEN}= {19(k): KEN}
	Ygn∈S, Vk∈IN, Ign(k) ≤ 1 => gn is bounded in Lo norm => S is bounded in Lo norm
	=> S is bounded in to norm
	EN Y K3C, YNOW SEE STATE STATE
	Assume S is bounded in I'm norm for any mEN.
	=> YmeN, FBER: YneN, YKEN, KMIgn(k) =B
	$k = n \Rightarrow n^m \leq B$
	m=) Tomas miles
Series Series	lot n=B+1 => nm = (B+1)m > B contradiction
	=> S is not bounded in lim norm for any mell

(d) Since K is bounded in I'm norm, 3 BEIR, Yfek, IIfIlm=sup{kmIf(k)1, kell} &B Take <>0 arbitrarily,
Take C= MB+1 so km < & for all k2C. Then for all k2C, and all fck, since B is an upper bound of < km/f/k)/, kEIN} 50 Km/f(k)/ = B => / f(K) & Fm (e) (fn) converges pointwise to f

=> For all kEIN, lim fn(k)= f(k) () {fn: hEN} is USI => YEO, 3CEN: UKOC, YnoN, Ifnikol < (2) Let 2>0 be arbitrary. Let k2C be fixed. By OQ, lim | fn(k) = | f(k) | < \frac{\x}{2} => YkzC, YneN, Ifn(k) - f(k) = |fn(k)| + |f(k)| < 2 fix some k < C, by pointnise convergence, 3MKGN: Yn>Mk, Ifn(k)-f(k) < E

S. YE>0,
take M = max { M1,, Mk-1}
HLEN.
Case 1. K < C, Y n > M, I fn (k) - f(k) < E  Case 2: K > C, Y n > M, I fn (k) - f(k) < E
Caso Z. K>C, 1+ n2M, 1fn(k)-f(k)/<6
so In converges to furiformly.
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