

## HW 2

3 LET  $\alpha$  BE FIXED POINT OF  $\gamma(x)$

WMDR

$$x_{n+1} = \gamma(x_n)$$

SUPPOSE

$$\max |\gamma'(x)| = k < 1$$

PROVE THAT

$$|\alpha - x_{n+1}| \leq \frac{k}{1-k} |x_{n+1} - x_n|$$

REMARK, BY MVT,

$$|\alpha - x_{n+1}| = |\gamma'(\xi)| |\alpha - x_n| \leq k |\alpha - x_n|$$

BAR'S NOTES:

MEAN VALUE THEOREM

$f(x)$  IS CONTINUOUS & DIFF'BLE  
ON  $[a, b]$

THEN, THERE IS AN  $\xi \in (a, b)$   
SUCH THAT

$$f'(\xi) = \frac{f(b) - f(a)}{b - a}$$

$$f(b) - f(a) = f'(\xi)(b - a)$$

THE TANGENT LINE AT OF

$f(x)$  @  $\xi$  HAS THE  
SLOPE