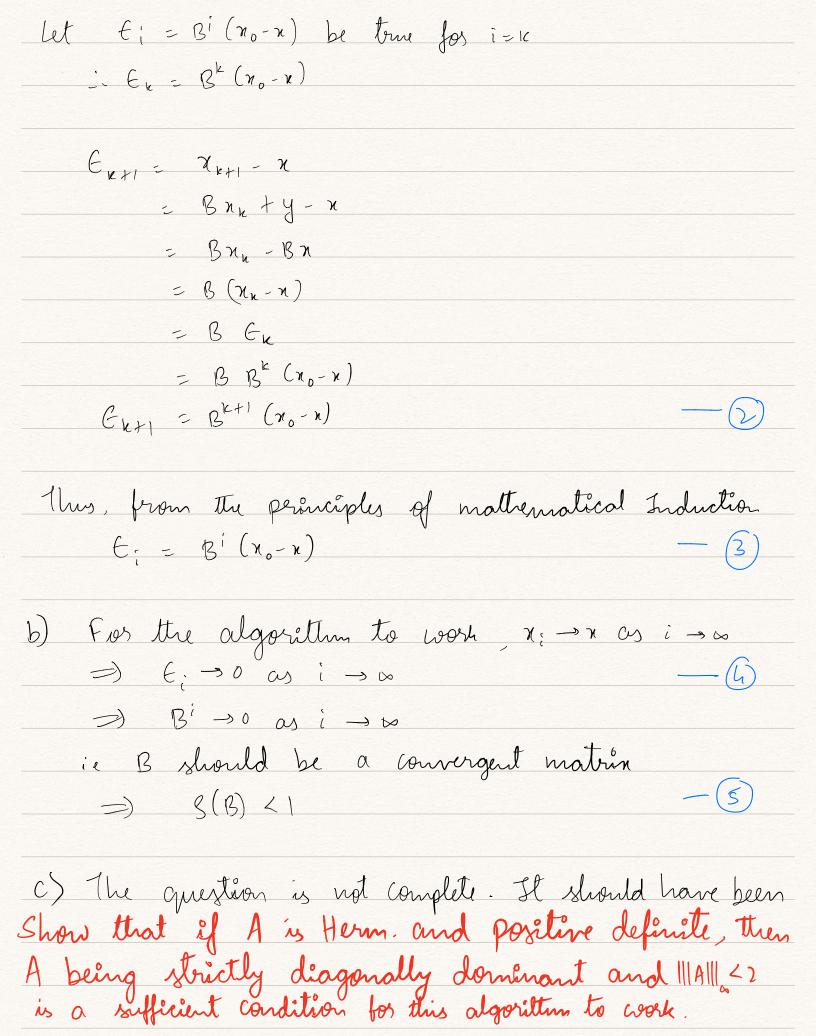
Note: Text in blue shows Marks. Text in green is not necessary SI. Let a, y & th and A & them, let B = I-A and XOE I' be an arbitrary vector. Given A and y, we wish to solve the linear system of equations Ax = y as follows FO) [=1,2,3 Do ni = Brinty a) let E; = n; -x be the error in the its eteration Show that E; = Bi (xo-x) b) Conclude that if g(B) < 1, then this algorithm c) Use Gersgorin thun To show that a hermilian A must be structly diagonally dominant and MAIII of 2 to ensure that this algorithm works. So) B = J-A Bn = 71 - y Let's prove (a) using Mathematical induction Ei - Xi - X E, = x, -x = Bno+y-x = Bx0 - Bx E, = B(x0-x)



28 Let y & x be unit 12-norm left and right Evers
respectively of $C \in \mathcal{C}^{n \times n}$ corresponding to a
simple Eval A. Let S(A) \( \geq \)   Ytx 1. Perone that
$S(\lambda) \neq 0$
So) let's prove by contradiction.
Assum S(x) = 0
i, ytx = 0 = 3 x 1 y
We have yth A = > yth A An = > n
ie $y \in N(A-\lambda I)^{+}$ $\lambda \times \in N(A-\lambda I)$
$x \perp y \Rightarrow x \in R(A-\lambda 1)$
$\Rightarrow \exists z \in t^h \text{ sit } x = (A - \lambda I)z \qquad (1)$
Shre x E N (A- > I)
$(A-\lambda I)x = 0$
$= (A - \lambda 1)^{2} = 0$
=> n 17 are generalized Evers of A corresp to >
Since I is a Simple Eigenvalue, orlg. mult =1
3) There exists only I 1. I generalized Evec
=> Z= da fos some d \$0 - 2

Ent we h	ove -	x = (A -	77)2				
		- (A -	-11)2	χ			
		= 2 (D	, - 2 I) y				
		= 0					
Which	is a (	ontradi	ction	sinte	Every	connot be	Euro
						sucorrect	
		4) +0.					3