

3= x+17 N=) Real Part y =) Imaginary Part 3= ガナノス y => Real Part 22 2 Imaginary Part 3=x+ij or 3=y+in [3= n+17]

Function of A Complet Variable f(3) is a function of complet variable 2 and is denoted by w W = f(2)w = 4+1'0 f(3) = 4,+1'Q U-> (n, y) (n, y) U -> Real Port 0 -> imaginary Past

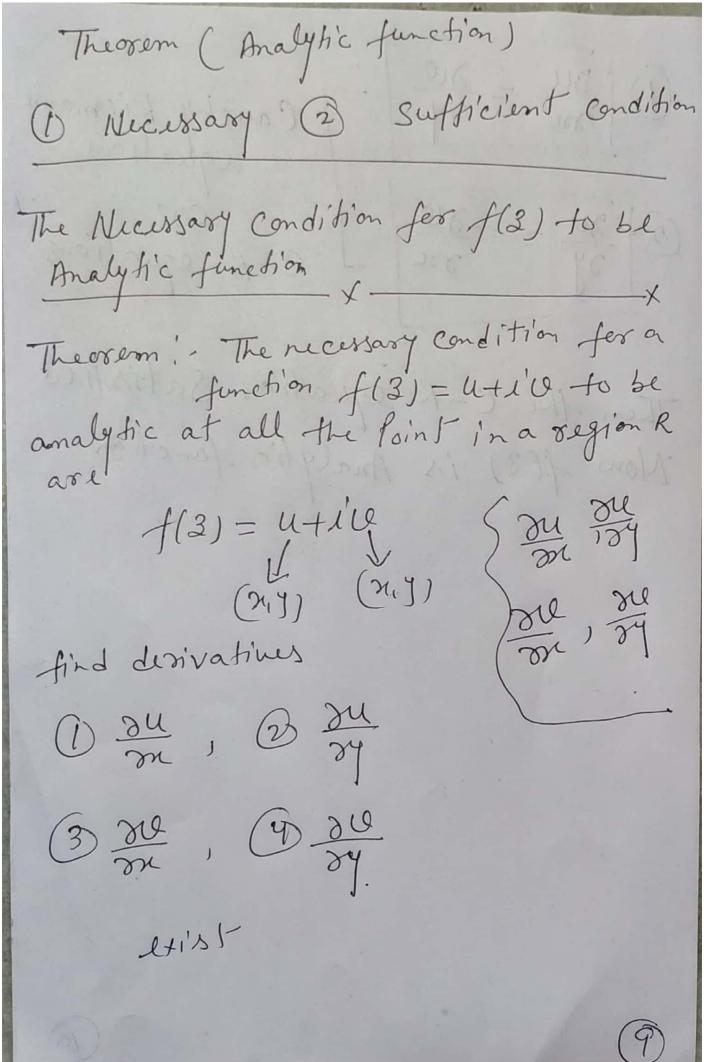
Complet distivatives 1) 3= x+1'y Ø = x−17 (3) 3= r(coso+1'sino) (9) 3 = r (ceso - 1'sino) 163 3 = re10 21111 - (8) - 6 3 = re-1'0 B w=f(3) (8) W= 4+1'0 (9) 6(3) = 4+10.

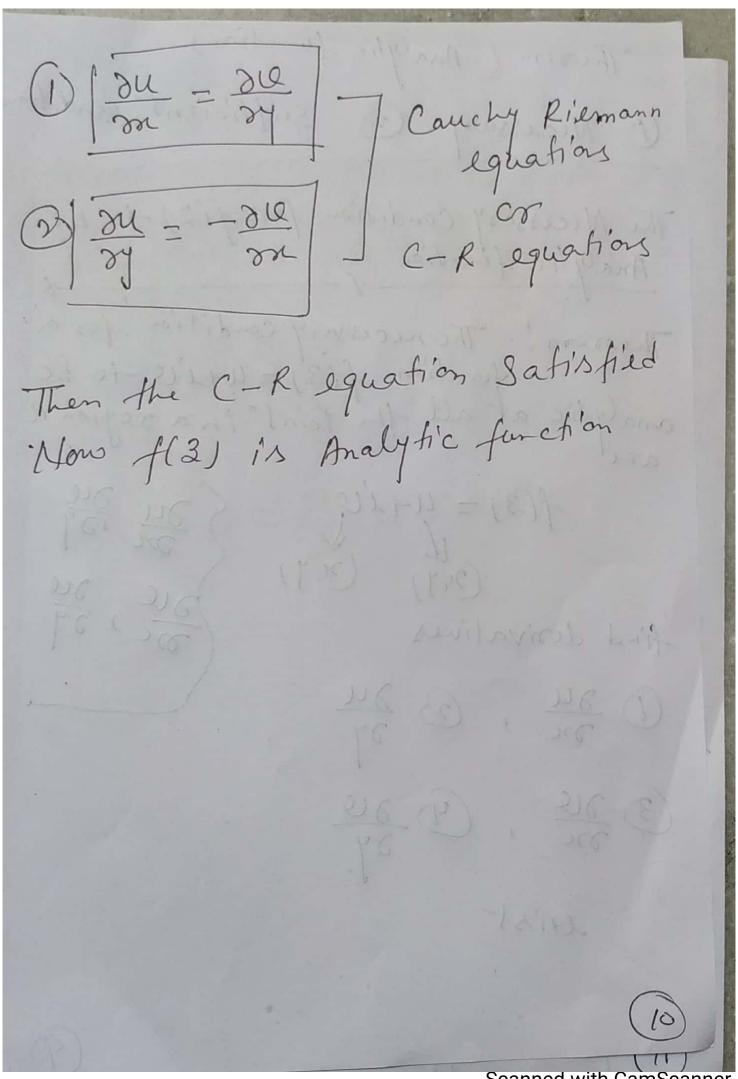
Continuity The function f(3) of a complex variable 3 is said to be continuous at the Point 30 if for any given Positive Humber (E we can find a Number of or A Such 1 that | f(3) - f(30) | < & i for all Points 3 of the domain Satisfying 12-30/ < 8 A(3) is said to be continuous at 3=30 if limit f(3) = f(30) 3-30

Differentiability 6t f(3) be a single valued function of the variable 3, then f'(3) = limit f(3+43) - f(3)43-790 1'(3) = limit f (3+30) - f(30) $3 \rightarrow 30$ (3+30) Provided that the limit exists and is independent of the Path along which Az->0

Analytic Function A function f(2) is said to be analytic at a Point 30 if f(3) is differentiable not only at 30 but at every Point of some neighbourhood of 20 A function f(3) 1s analytic in a domain if it is analytic at every Point of the domain. The Point at which the function is not differentiable is called a Singular Point of the function. An analytic function is also known as Cotton (1) Holomorphic 2) Regular (3) Monogenic.

Differentiable = Analytic function Analytic function = Differential = continuous (function) 11 p(13) Differentiable $f'(2) = \text{Limit} \quad \frac{f(3+3s) - f(3s)}{(3+3s)}$ Differentiable at the Point Analytic function all Point Alono Ferric





Sufficient condition For f(2) to be Analytic Theorem! The Sufficient condition for a function f(3) = 4+1 4 to be analytic at all the Points in on Region R' ane (1) f(3) = 3u +1 30 3 f'(3) = 30 - 130

Necessary Condition C-R. equation | 2n = 2d | 2h = -20 only check f(3) is analytic function les or No C-Requation are satisfied (res fl3) analytic function 7 C-Requation and Not satisfied [H(3) is No analytic function? Sufficient Condition if any one use find f'(3) 3 f(3) = 34 - 1 34