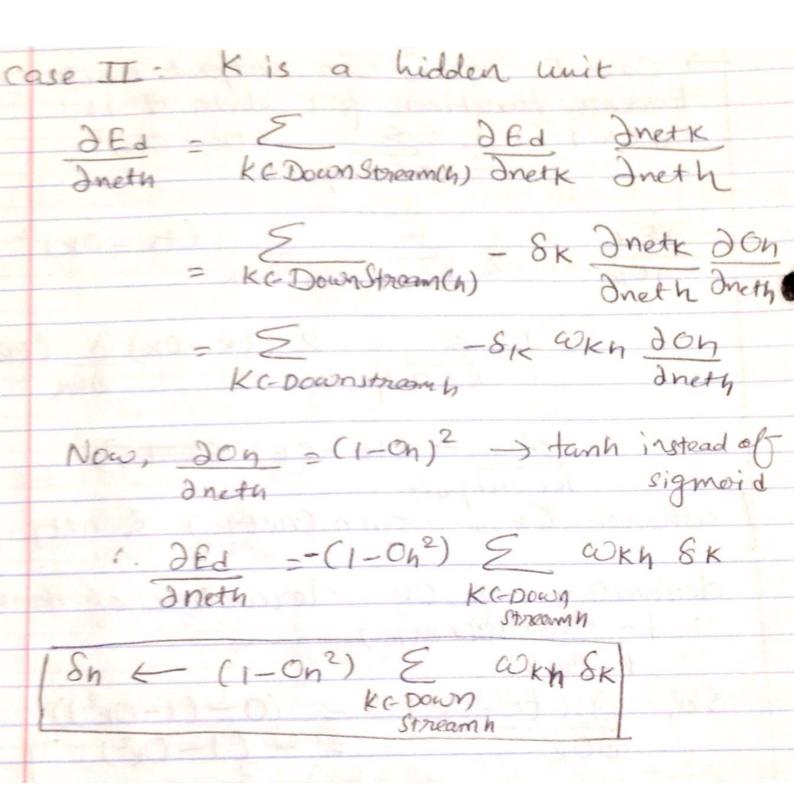
we will use tank(x) = ex-ex activation case I: DEd for output unit aneth DEN = 1 5 D (tk-0K)2

DOK 2 K-OWPUTS DO) =  $\frac{1}{2}$   $\sum 2(t_K-o_K) \frac{\partial}{\partial b_K}(t_K-o_K)$ KGOentputs < - (tk-0k)

30K = I dnetk DEd - (tk-OK) dnetk Lets say - (tk-ok) = -8K we will call the partial of Error wort not for any unit K follows. DEd = - 8K Ineti where Si=(tx-0x) Daji = 18K XKi 80 (tk-OK) rotows



```
2. 0:000 + w, (x, +x2) +
Ans 0= wo+ wix, + wixit.
 => First, Error Function is defined as
E (13) = 2 2 (td - 04)2
   = uplate suite is the same w; = w; + Dw; where Dw; = -n dE
  For wo, DE = 2 L & (td-0d)2
            = 1 & 2 (td-0d)2
     = 2 dep 2 (td-Od) 2 (td-Od)
           2 = (td-Od)(-I)
        = - E (td-0d)
       So, Swo = 1 & (td-0d)
    =) For w, , w2, ... wn
JE = 2 1 E (td-04)2
             1 € 2 (td-0d)2
           = 1 & 2 (td-0d) 2 (td-0d)
= 2 (td-0d) (- (xid + xid2))
    SO, DW; = n & (td-od) ()Cid + )Cid
```

here  $h_1(x) = 2h_1(2x) - 1$ There  $h_1(x)$  is a rescaled  $h_1(x)$  function

There  $h_1(x)$  is  $h_2(x)$  is differing by

Tinear transformations of constants

here  $h_1(2x)$  multiply by 2 is linear transformation of  $h_2(x)$ , rescere substracting 1 forom  $2h_1(2x)$  is constant scaling of  $h_2(x)$ .

Ecw) = 1/2 E E (tkd-OKd)2+PijEDji2 wji + wji + swji sw1; = - 7 DE(18) DE(W) = D 1 S S (tkd-Okd)2+ PD Wis2

DWiji Z SED KGO

(tkd-Okd)2+ PD Wiji

1 The first team already derived in Back propagetion Algo. : DE(W) = - (tj-0j)0j(1-0j)xj; +2pwj; For output nodes, wii < wii + n (tj-0j) oj (1-0j) xji + xrwji wji + (1-27) wji + n (tj-0j) Oj (1-0j) xji wii + Bwii + MSjaji where B= 1-2np & Sj=(tj-0j)0j(1-0j) For hidden layers,

wji = Bwji + nsjxji

where  $\beta = 1 - 2np$  & Sj = 0j(1-0j) & skwkj

kc Down KC DOWN Stream(j) =) So we have multiplier B in both derivatives.