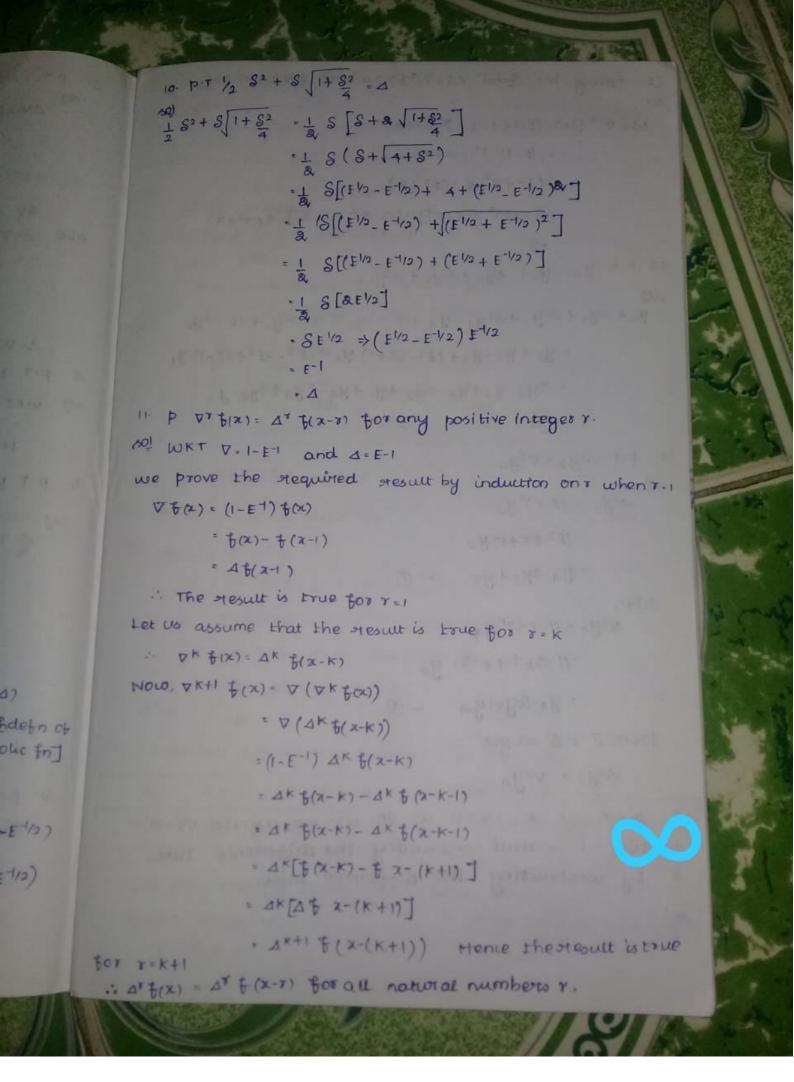
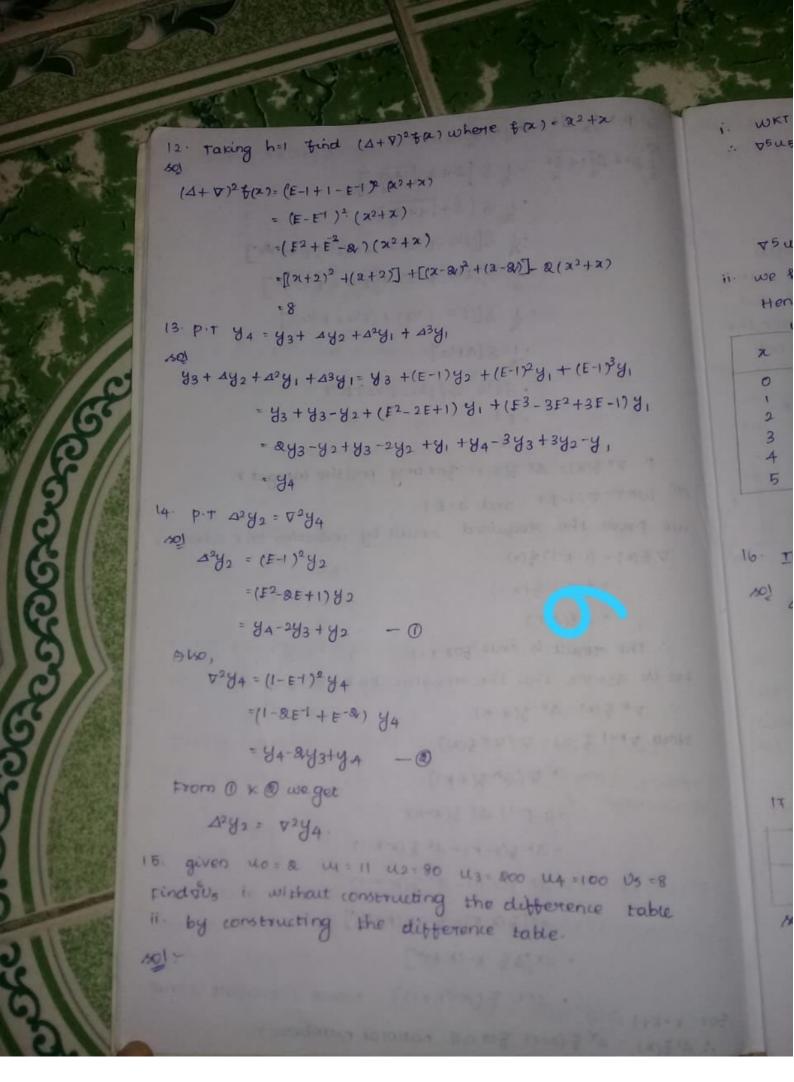
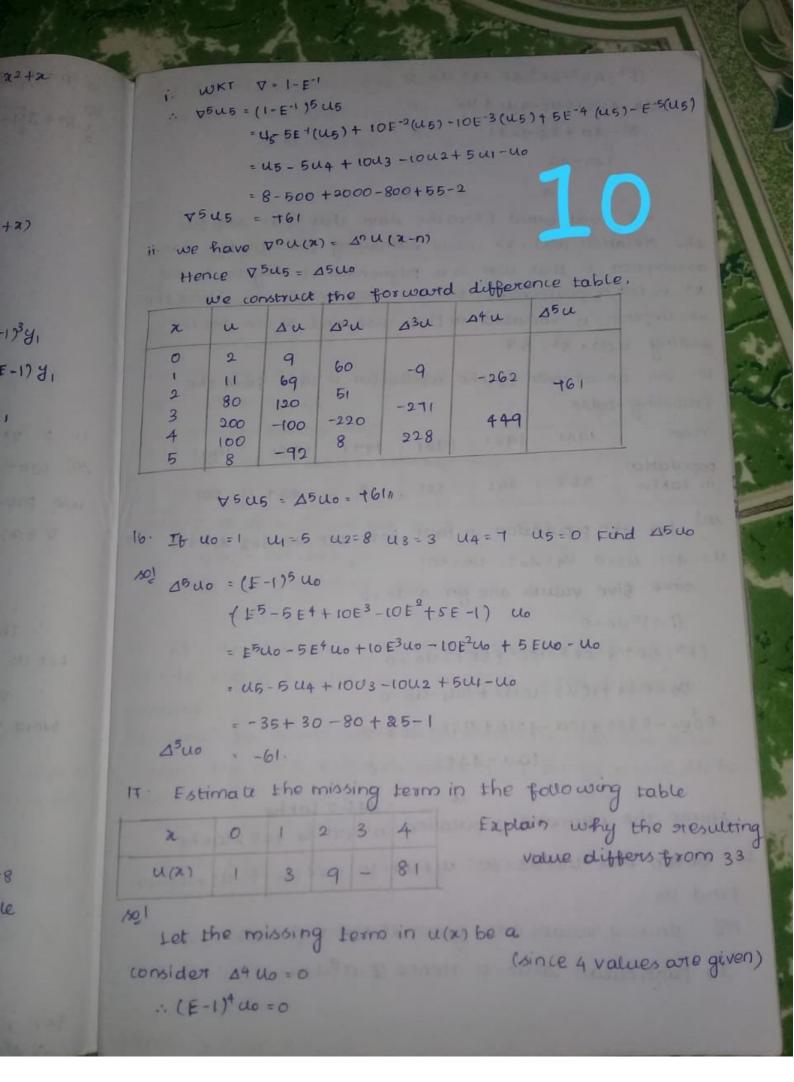


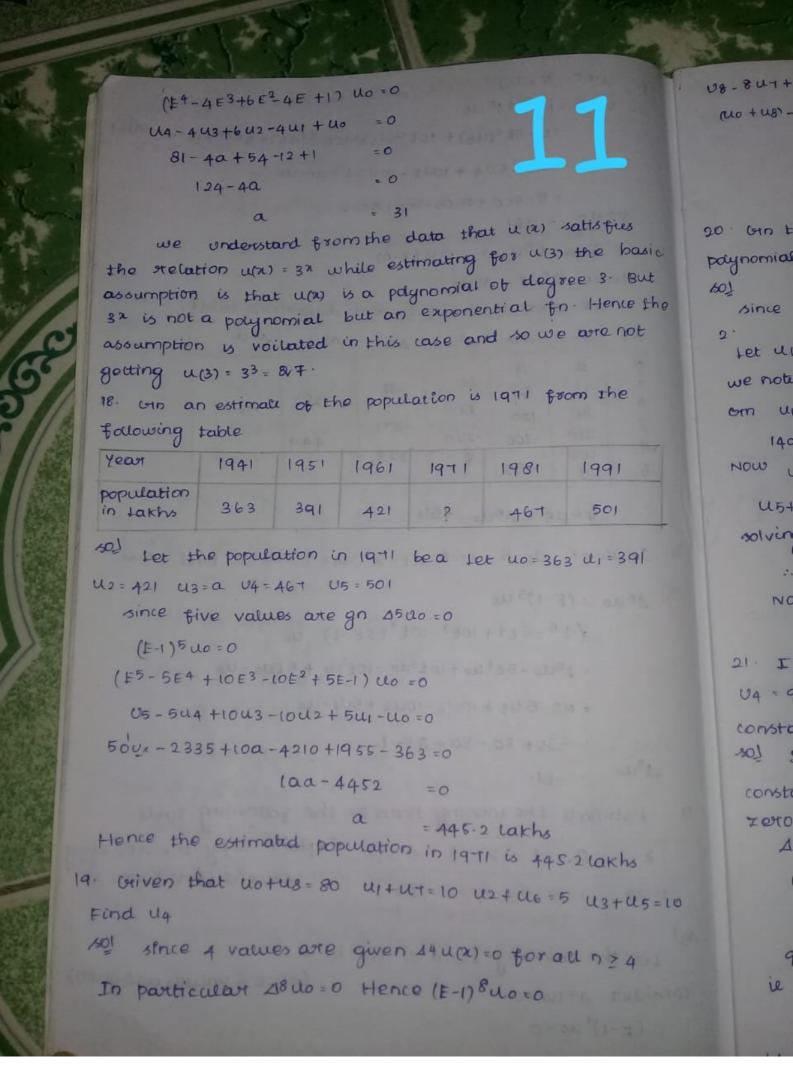
Scanned with CamScanner





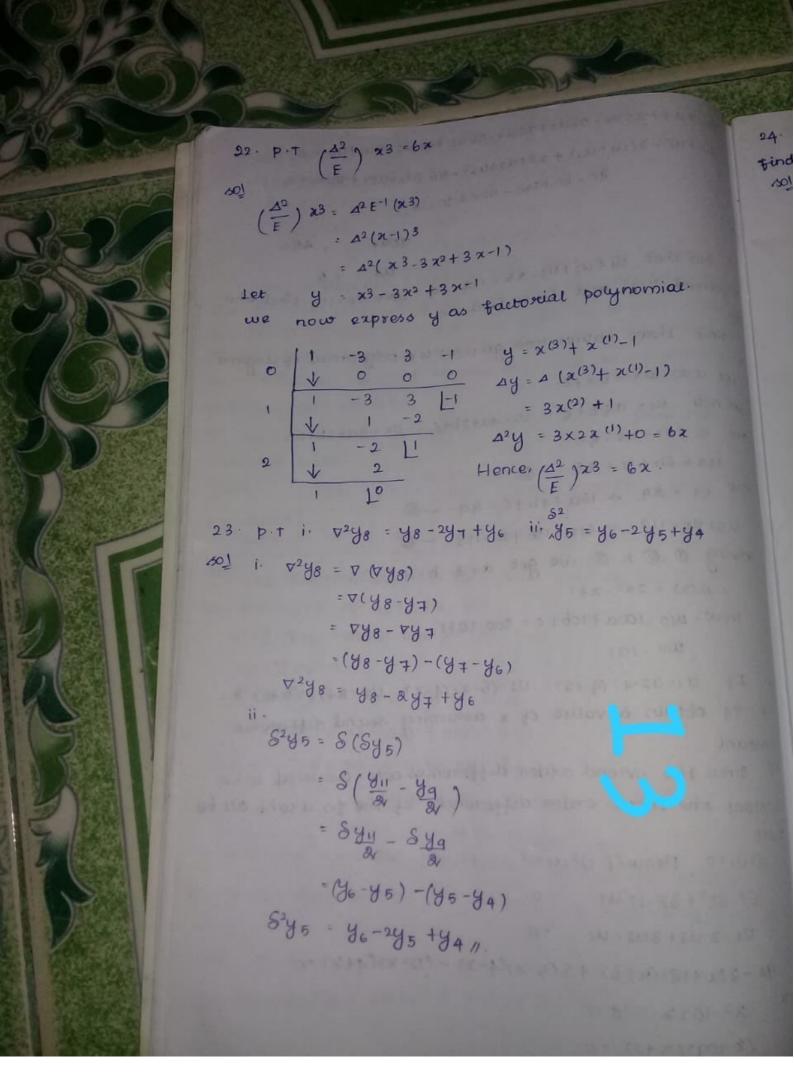
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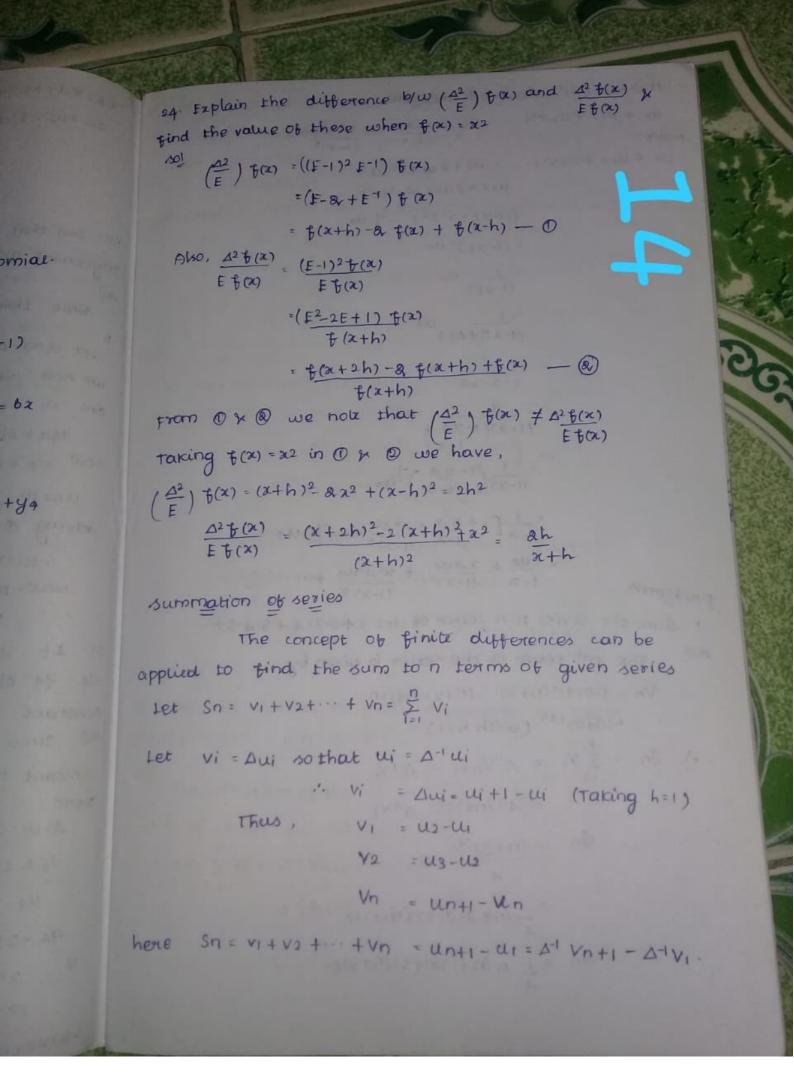


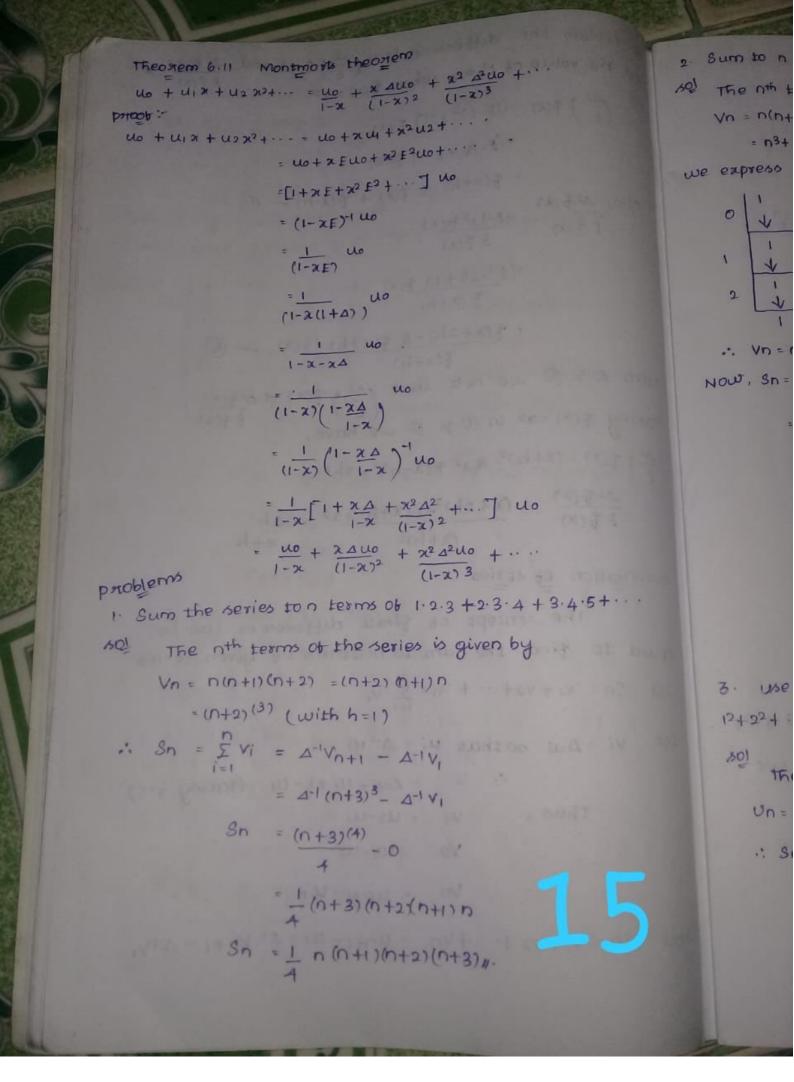


Scanned with CamScanner

```
U8-841+2846-5645+7044-5643 +2842-841+40 = 0
            (10 + 48) - 8 (44 + 441) + 28 (42+46) - 56 (43+45) + to44 = 0
                       80-80+140-560+to U4 = 0
                                           TOU4 - 420
                                            U4 = 6.
to fies
           20 Gro that 4442+43= 25 44=29 45+ 46=113 Find the
re basic
           polynomial u(21) and hence find u10.
3- But
            since three values are grupe) is a polynomial of degree
Hence the
te not
            let u(x) = ax2+bx+c
           we note u = a+b+c U2=4a+2b+c U3=9a+3b+c
the
           om 41+02+03=25
              14a+6b+3c=25 -0
           Now 14 = 84 + 16a+4b+c-&9 -0
91
             U5+ U6 = 113 > 61 a + 116 + 2c = 113 - 3
           solving 0, @ & @ we get a = & b = -1 c = 1
391
              :. u(x) = 2x2-x+1
             NOW, 410=1000+106+c=200-10+1
                   U10 = 191
          21. It U1-(12-2) (4+27 U2=(6-2) (4-2) U3=&+187(2+6) %
          U4 = 94 obtain a value of x assuming second difference
         constant
         sol since the second order differences are assumed to be
         constant the third order differences of the for u will all be
          TOTO
            13 41 = 0 Hence (E-1)3 41 = 0
            (E3-3E2+3E-1) U1 = 0
5=10
             U4-3 U3+3U2-U1 =0
           94-3(2+18)(2+6)+3(5-2)(4-2)-(12-2)(4+2)=0
          ie x2-101x-218=0
              (2-109)(x+2) =0
          Hence, x = 109 x = - &
```







```
2 Sum to n terms of the series 1.3.5 +2.4.6+ ..
   All The nth term of the series is
       Vn = n(n+2) (n+4)
            = n3+6n2+8n
   we express n3+6n2+8n as factorial polynomial with h=1
      .. Vn = n(3) + 9 n(2) + 15 n(1)
  NOW, Sn = E Vi = A-1 Vn+1 - A-1V1
             = A-1[(n+1)(3)+q(n+1)(2)+15(n+1)(1)] =0
             = \frac{(n+1)^{(4)}}{4} + \frac{q(n+1)^{(3)}}{3} + \frac{15(n+1)^{(2)}}{2}
             =(\underline{n+1})\underline{n}(\underline{n-1})(\underline{n-2}) + 3(\underline{n+1})\underline{n}(\underline{n-1}) + \underline{15}(\underline{n+1})\underline{n}
            = n(n+1) [ n2-3n +2+12n-12+30]
             = \frac{n(n+1)(n^2+qn+20)}{4} \rightarrow n(n+1)(n+4)(n+5)
3. use the method of finite differences to prove
1^{2}+2^{2}+\cdots+n^{2}=\frac{n(n+1)(n+1)}{6}
     the nth term of the series is given by,
  Un = n2 = n (n-1) +n = n(2)+n(1)
  : 3n = 5 vi = A-1 Vn+1 - A-1 V1
                  = A-1[(n+1)2)+ (n+1)(1) 7 -0
                 =\frac{(n+1)(3)}{3}-\frac{(n+1)(2)}{9}
```

