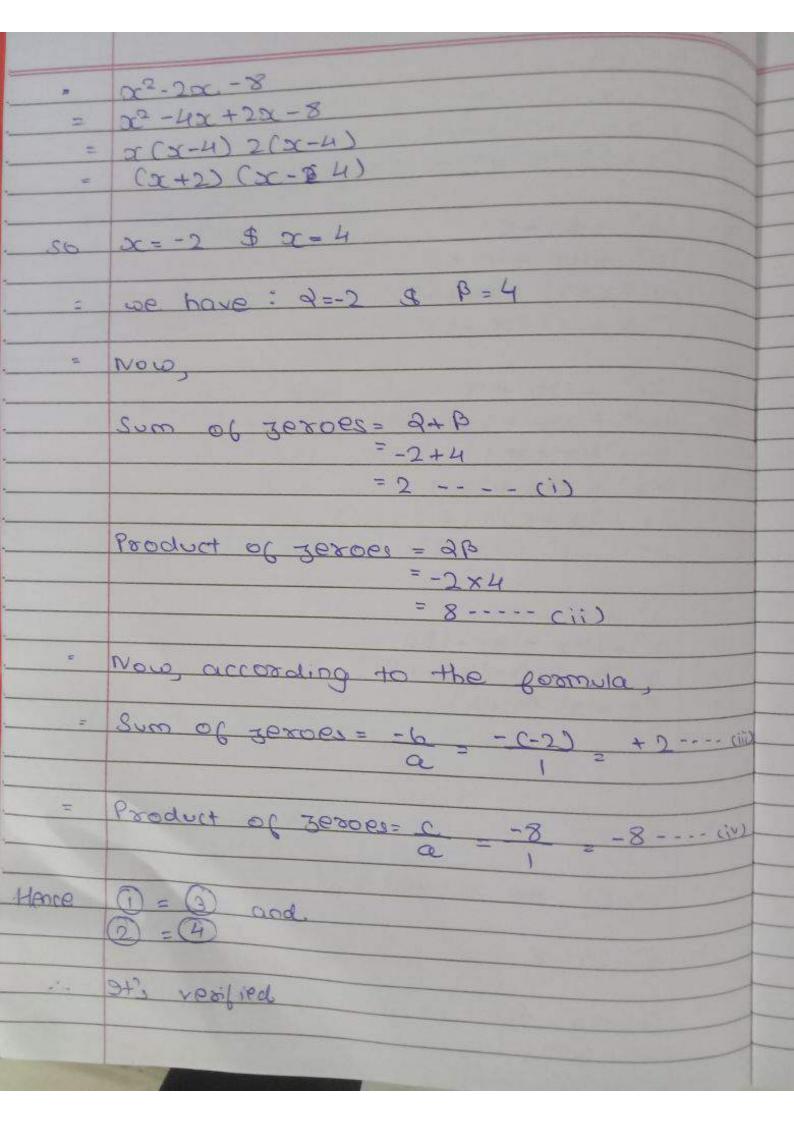


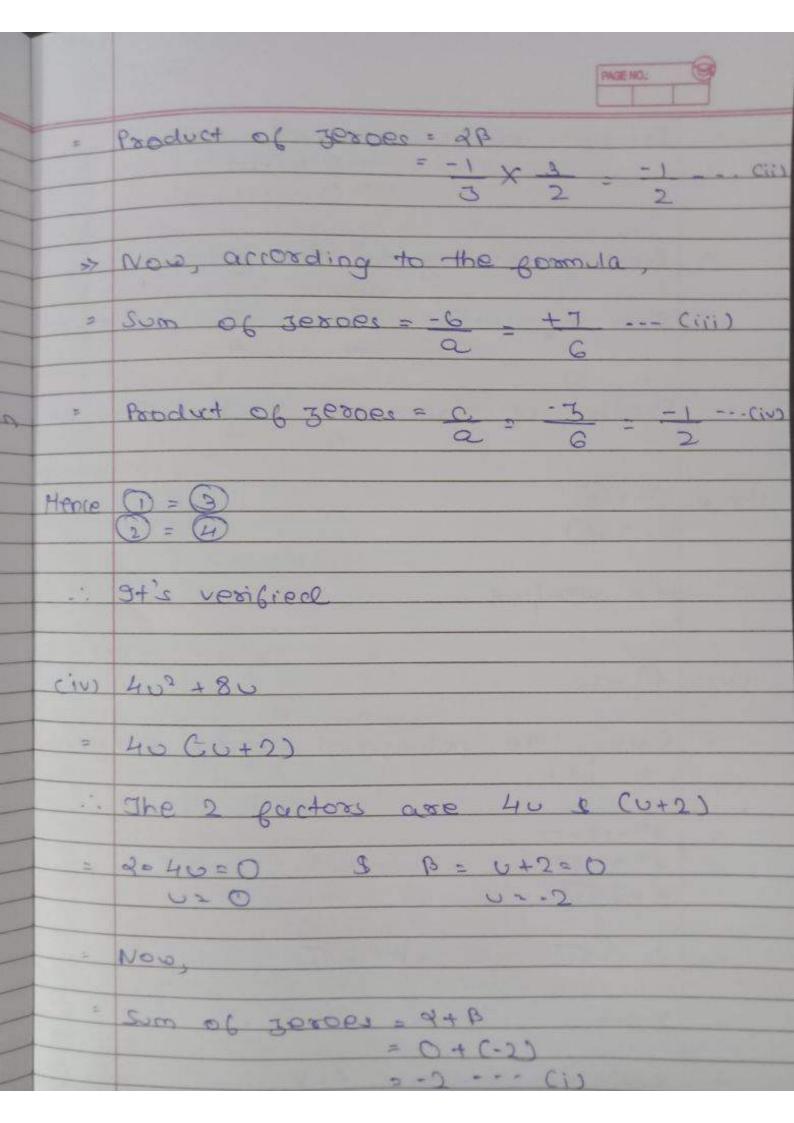
	PAGENO:
	the degree of that Polynomial
	the degree of
<u>→</u>	Ex. 2.1
	or home
(1)	Final no. of zeros:
	• • •
	No. 06 76203 : 0
	No. 06 Zeros: 7
	No. of zeros: 3
	No. 06 Zesos: 2
	No. 06 Zeros: 4
<u> </u>	No. 06 20801: 3
	Middle-term-splitting (extra questions)
	4x2-4x+1
<u>ciis</u>	$\alpha^2 - 2\alpha - 8$
<u>cinis</u>	$2x^2 + 8x + 8$
(iv)	$4x^2 + 12x + 5$
( <sub>1</sub> )	$x^2 + x - 182$
77	Answers:
<u>cia</u>	402-402+1
5	4x2-2x-2x+1
2	$2 \propto (2 \propto -1) - 1(2 \propto -1)$
-	(2x-1)(2x-1)

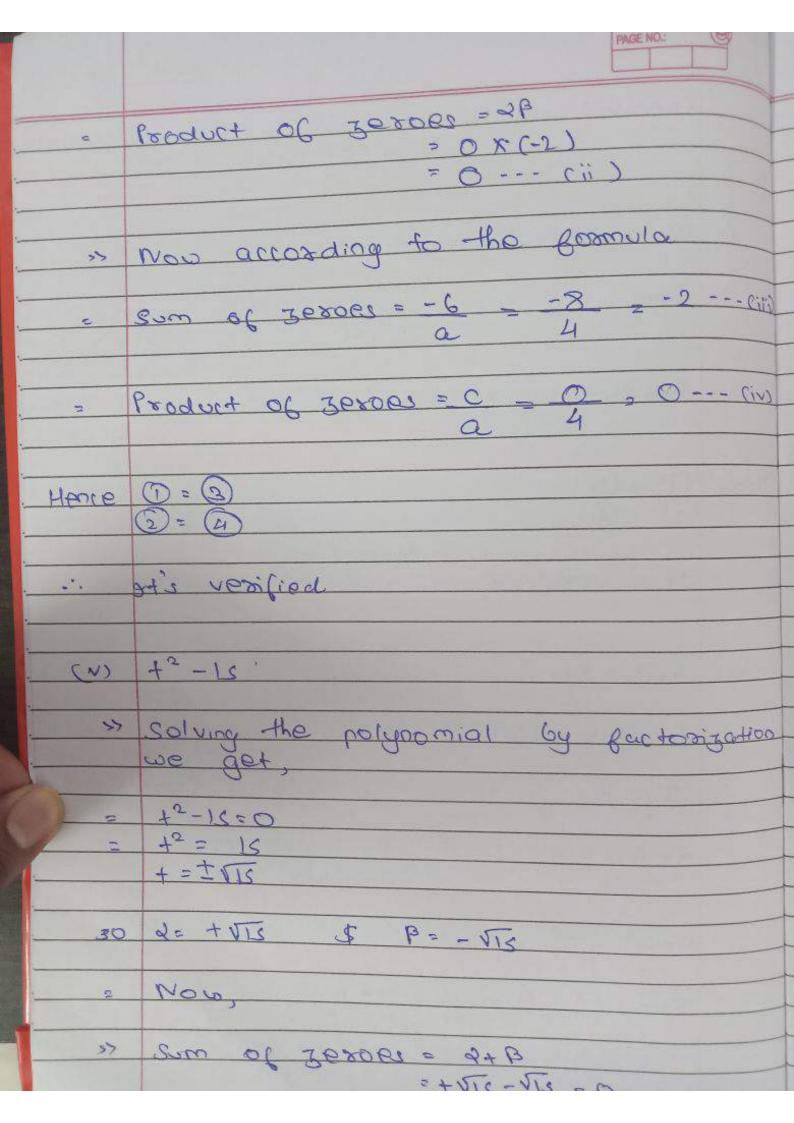
```
x2-2x-8
   x2-4x+2x-8
   x (x-4) +2 (x-4)
   (x+2) (x-4)
(iii) 2x2 + 8x+8
   2x2 +4x +4x +8
   2x (x+2) 4 (x+2)
   (2x+4) (x+2)
(iv) 4x2 +12x +5
   422 + 52 + 12 + 5
   æ (4x+x€S)
   4x2 + 10x +2x +5
   2x (2x+5)+1 €2x+5)
   (22 +1) (22+5)
   22 + x - 182
    x2+14x-13x-182
   2 Cx+14)-13 (x+14)
   (x-13) (x+4)
   Ear 2.2
  Verify the solutionship:
(i) x2-2x-8
  Solving the polynomial by factorization
```

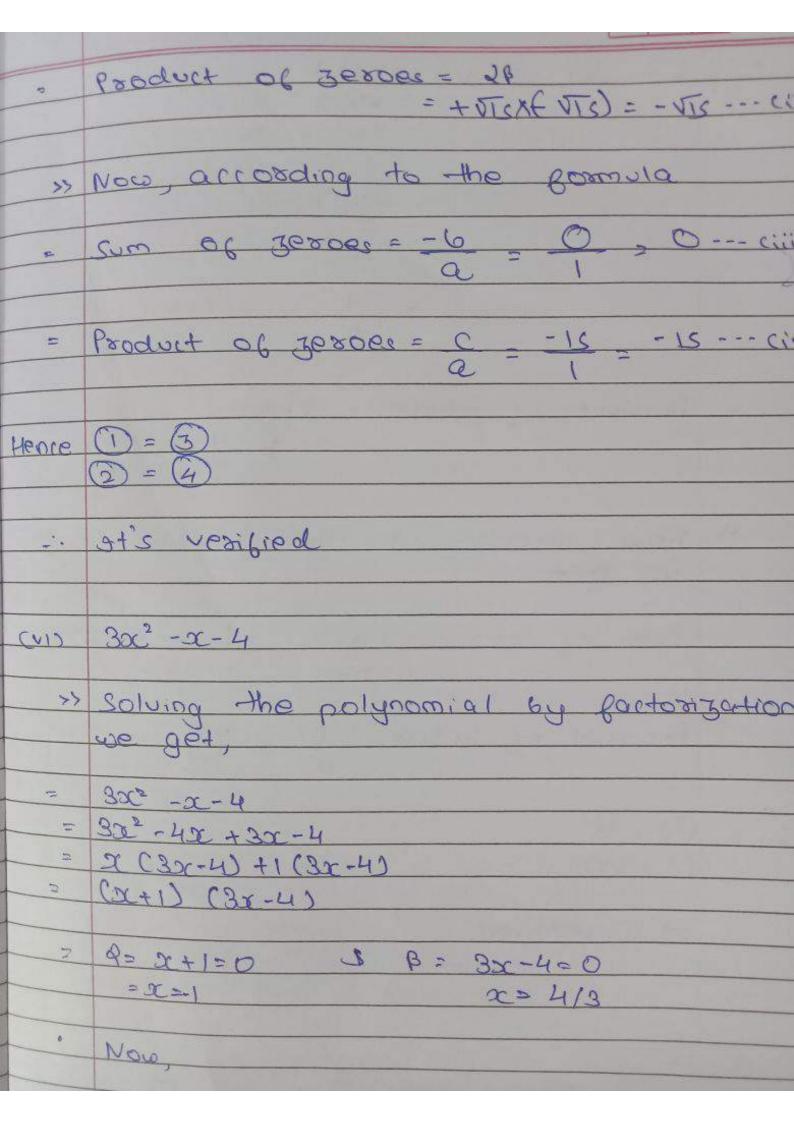


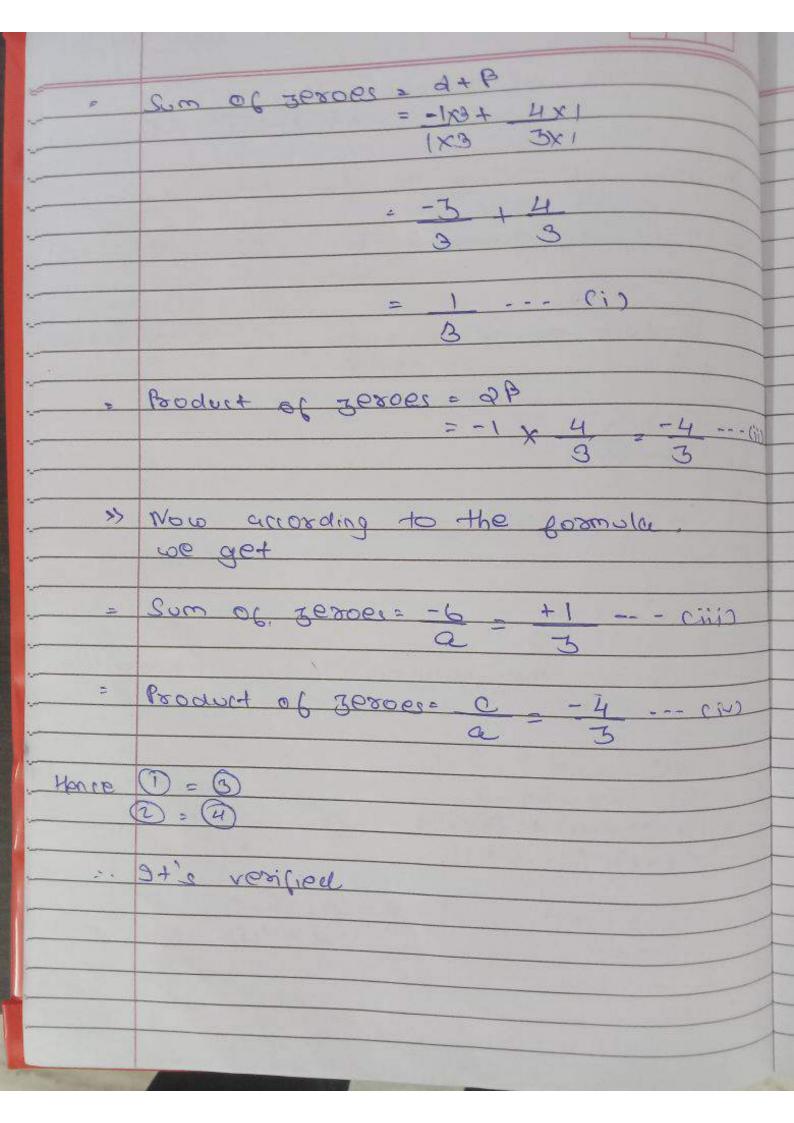
cii) 452 - 45 + 1 or solving this polynomial by factorization we get, 452 - 45 + 1 452 - 80 25 - 25 +1 = 25(25-1)-1(25-1) (25-1) (25-1) so S= 1 \$ S= 1 2 2 so we have 2= 1 \$ B= 1 = Now, = som of zeroes = 2+P = 1 + 1 = 1 - - - (i) = Product of Jeroes = 28 = 1 x 1 = 1 - (ii) wow, according to the formula, = Sum of 3eroes = -6 = -(-4) = 4 = 1 -- (11) = Product of Jerops = C 1 -- (11)

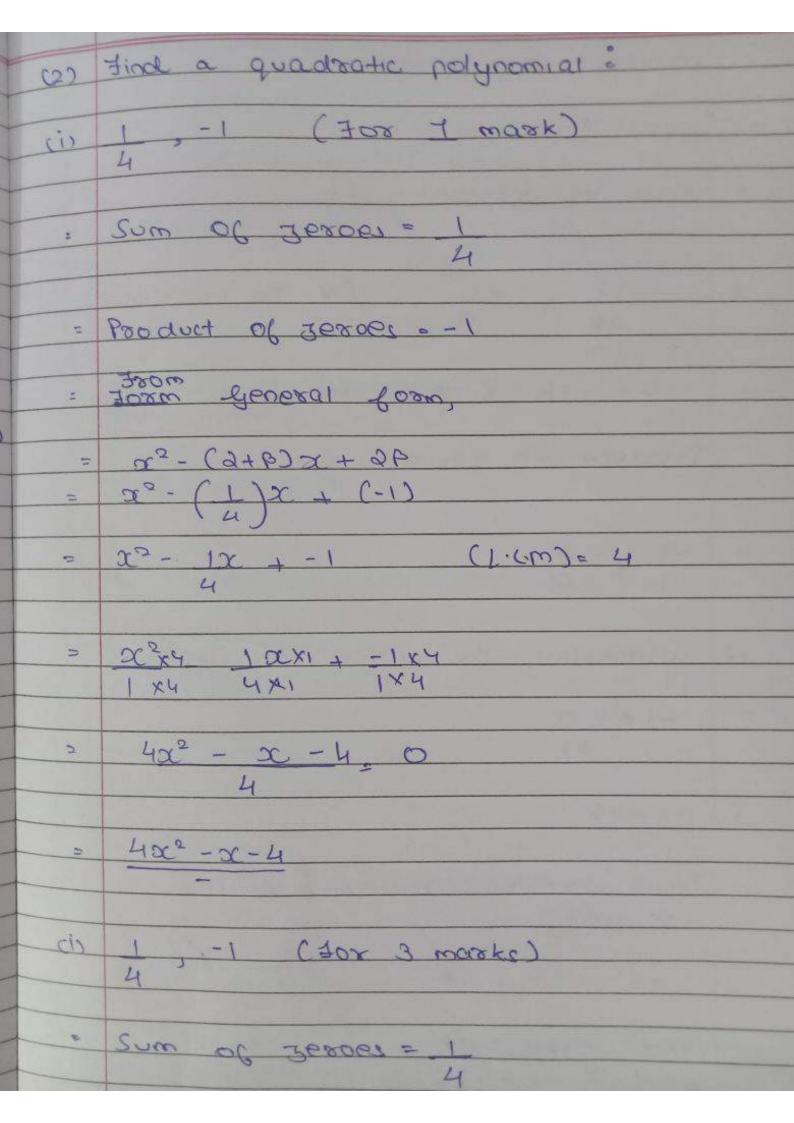
Henre D=3 and : ot's resified (iii) 6x2-3-70c 6x2 - 7x -3 solving this polynomial by factorists we get, 6x2 -7x -3 622-9x +2x -3 3x C2x-3) +1(2x-3) (3x+1) (2x-3) x=-1 & x= 3 02 2=-1 \$ 8=3 00 Now, Sum of 368081 = 2+B = -1x5 + 3x3-- (i)











: broduct of 362062 = -1 we know, Sum of Zexoes = -6 1k = -6 (K ce constant)
4K a 6= -1K \$ 8 a= 4k Product of zeroes = C -1 = 0 : subitituting the value we get, : C=-4K : Now from Standard Boron we get, asc2 +65- +c & = 4xx2 - 1xx - 4x = x (4x2 - x - 4)

cii 5 , 1 CI maxk) = Som of Jeroes : 17 Product of Jeroes: 1 = 32000 fleverd) Baru; 22- (9+B)X+ (8B) x2- (12)x + (1)  $= x^2 - \sqrt{2}x + 1$  $= \frac{x^2x^3}{1x^3} \frac{\sqrt{2}xx^3}{\sqrt{2}xx^3} \frac{1x1}{1x1} \frac{(1-6m=3)}{1}$ = 3x2 - 3\5x +1 = 0  $= 3x^2 - 3\sqrt{2}x + 1 = 0$ (ii) V2 1 (308 3 mark) = sum of 3esoes = 22 # 4 · Product 06 :0805 = 1

Lee know, Sum of 30x003=-6 CK be constant) V2K=-6 Product 06 Jeroes = C Now, 80 Boom Handard Born me dot = 922 + 6x +C Kx2 - VDEC + K k (22-12x+1) 322-350 +1 0 -322-3522+1 (iii) O, JS (1 marks) Sum of zeroes=0 Product of zeroes= 5 From general form we get, x2 - (2+B)x + 2B  $x^2 - CODx + CVS)$ 22 + 55 (iii) O, V5 C3 marks) = Sum of Beroes = 0 Boduct of zeroes = 15 0- = 130838 go muz OK = -6 : a= 1k , 6=0k Product of zeroes = c = 15 = C -: C= 15K

From standard form we get = ax2+bx+C = 1Kx2 + OKOC + J5K = K (x2+0+VS) = K Ox2 + VS) : x2+15 (iv) 7, 7 C7 mark) : Sum of 3000es= 1 = Product of zeroes =1 = 3000 general form we get 23 0 - (3+B)2 + 3B a2 - C - 1)x + -1 J3-241 (IV) 7, 7 (3 marks) Sum of 362062 = 1 brognet of Jerobi=1 Sum of 300000 - 6-6 1K = -6

: a= 1k 6=-1K = Product 06 30000 = C = 7 2 C 2 C= 1K = Now from the General Rosmula me det ax2 +6x +c = Ikoc2 - Ikx+ 1k KCX2-x+1) K is condant (v) Sun of 38800 = -1/4 (I masks) Product of 3exos = 1/4 For the formula we get x2- (8+B)x + (8B) x2 - (-1x) + (4) = 22 + 12 + 1 : 72+12 +1

C3 marky (4) Sum of 30800 = -6 = - 1 K - 6 = 6=1K = a = 4K = 6209014 of 26207= -C = 1K = C = C= IK = 320m Blevezal Cosumora ma det = 4002 + 1 koc + 1 k = 4202 +20+1 evis sum of zeros= 4 Ct markel (300014 of 362010 7 = Osing = K (x2-(3+B)+3B) = K(x2-4x+1) en of 3eson = -6 4k = = 6 = 1k 1k a = 6= -4k

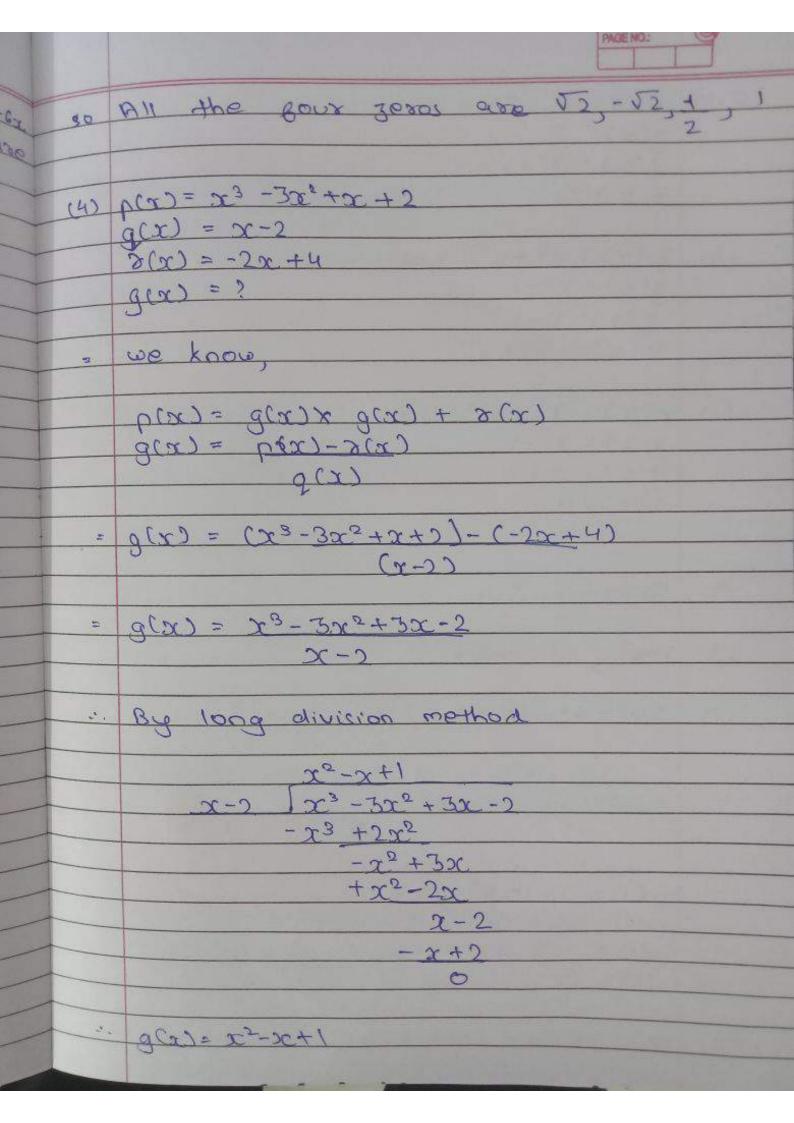
: 120duct of 3exos = C = IK = C .. C= IK so using the general formula we get, 1Kx2-4Kx+1 x cx2-4x+1) -> Exercise 2.3 U) Divide : (i) p(50) = x3 - 3x2 + 1x-3 g(x)= x2-2 x2-2/x3-3x2 + 5x -3  $-x^3+2x$  $-3x^{2}+75c$  $+3x^{2}-6$ 700-9  $E-\infty=(\infty) = 0$ P-25-6(2)8 2+x2+ 2xx-2x=(x) g(x) = x2-x+1

 $\frac{x^{2}-x+1)x^{4}-3x^{2}+4x+5}{x^{3}-4x^{2}-x^{2}}$   $\frac{-x^{3}+x^{2}-x^{2}}{x^{2}-x^{2}}$   $\frac{-x^{3}+x^{2}-x^{2}}{x^{2}-x^{2}}$  $+3x^{2}-3x+3$ = 9(x)= x2 +x-3 & 8(x)= 8 2+x2-12 = (x) q (iii) 3(x) = -x2+5  $= -x^{2}+2)x^{4}-5x+6$   $+ x^{4}+2x^{2}$   $= 2x^{2}-55c$   $= 2x^{2}+4$ -Sx+10  $\frac{x(x)_{5}-2x+10}{(x)^{2}-x_{5}-5}$ 

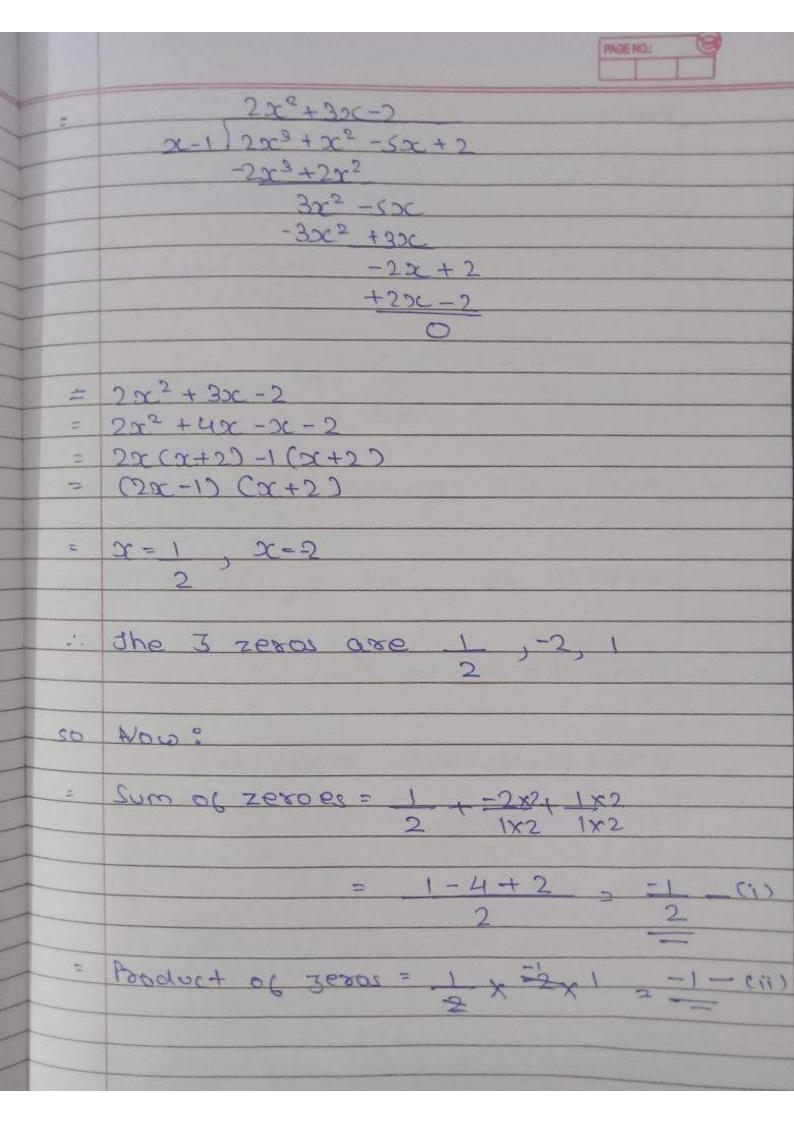
(5) resible the bactor; (i) p(x)= 2+4+3+3-2+2-9+-12 Q(x)=+2-3  $2+^2+3++4$  $+^2-3$   $2+^4+3+^9-2+^2-9+-12$ -2+4 +6+2 3+3+4+2 -3+3 +9+ 4+2-12 - 4+2+12 12-3 = O so we can say that it is a gartor (11) p(x)= 3x4 +5x3 -7x2 +2x+2  $g(x) = x^2 + 3x + 1$ 30°-4x+2  $\frac{x^2 + 5x + 1)3x^7 + 5x^8 - 7x^2 + 2x + 2}{-3x^4 - 9x^3 - 5x^2}$ -4x3 510x2+2x +4x3+12x2+40c 2x2+6x+2  $-2x^2-6x-2$ x2 +3x +1=0 so we can say that it is a gartor (iii) p(x)= x5-4x3+x2+3x+1  $q(x) = x^3 - 3x + 1$  $x^{3}-3x+1$   $x^{5}-4x^{3}+x^{2}+3x+1$   $-x^{5}+3x^{3}-x^{2}$  $-x^3 + 30c + 1$ +x3 -3x +1 : x2-1=02 so we can say that it is not a garder (3)  $p(x) = 3x^{3} + 6x^{3} - 2x^{2} - 10x - 5$ 2004C= \(\frac{2}{3}\) -\(\frac{5}{3}\) = Sum 06 3e80e1= [5] \\\ \frac{1}{2} = 0 Product of 3eroes= 15 x-15 = -5 = 3000 the standard formula we get  $= x_{5} - (9+b)x + (-2)$   $= x_{5} - (9+b)x + 3b$  $= x^2 - 5 = 0$ 

= 3x2-50 3x2-5 16 a factor of 3x"+6x3-2x2-10x-Br2+2x+1 3x2-5 3x7+6x3-2x2-10x-5  $6x^3 + 3x^2$  $-6x^3 + (0x)$   $3x^2 - 5$ -3x2 +5 = we have g(x) = x2 + 2x+1 which is a factor of p(x)  $x^2 + 2x + 1$ 22+x+x+1  $\chi(\chi+1)+1(\chi+1)$ (x+1) (x+1) The other 2 gartor are -1,-1 36 All gour gardon are 5 ,- 15

Extra 7 Find all the zeros of 2x4-3x3-1/1 -2, 16 you know that 2 of the revolution VZ 8-12 Find other zeros Ans = Sum 06 28801 = 52-52=0 Product of 3eras= \(\bar{12} \times (-\bar{12}) = -2 = 320m the Bosmula we get, = 22- (9+B)x + (9B) = x2 - (0)x + (-2) - x2-2 is a gartor of p(x) 50 2x2-3xC+1 x2-2/2x4-3x3-3x2+6x-2 -2x4+4x2 -323 +202 +3x3 -6x 2x2-3x+1  $2x^{2} - 2x - x + 1$ 5x (x-1)-1(x-1) (1-x) (x-1) so the 2 38801 are 1



(5)(2) p(x)=2x2-2x+14 g(x) = 29(00)= 29-2+7 8(x)=0 (11) p(x) = x3 + x2 + x+1  $q(x) = x^2 - 1$ g(x)=x+1 g(x) = 2x+2(ii) p(x)= x3+2x2-x+2  $q(x) = x^2 - 1$ q(x)=x+2 D(x)=4 4.C 921189 139 1-4 (1) Veriby & check & (i)  $2x^3 + x^2 - 5x + 2$ ,  $\left(\frac{1}{2}\right)^{1} - 2$ 50 = Sum of 20000 = 1 =  $p(1) = 2x^3 + x^2 - 5x + 2$ = D(D= (5x(1)3) +(1)2- (5x1) + 5 = 600 = 5 +1-2+5 0 = (1)9 = " x-1 13 a gartor of 2x3 +x2 -5x +2



Produts Broducts of Jeros = CCT +2)+() 4 (1 ×1) Products of 30001 = -1x+(-2)x+1 -2+-4+1 = 5 — (iii) = 3000 the formula we can derive = 8+8+ 1= -6 (com of 36202) 9+B+Y=-1 - Civ) P(28+84+72) = c (Product) = -S --- (v) = 284 = -d (Product at a time) -2 -1 --- (vi)

```
(vi) = (i) ...
   cii) = (vi)
   (ni) = (v)
.. 94 is verified
(ii) p(x)= x3-4x2+5x-2 where: 2, 1, 1 (zeros
= D(2) = (2)3 - (4x(2)2) + (5x2) -2 (letx=2)
= (12)= 8 - 16 + 10 - 2
= 012)=0
   X-2 is a factor of place)
so By long division:
           x^2 - 2x + 1
      x-2 x3-4x2+5x-2
          -x_3 + 2x_5
             -2222 + 530
              +222 -42
                 DC-2
                    - DC +2
                    0
   \alpha^2 - 2\alpha + 1
   x^2 - x - x + 1
   2(2-1)-1(2(-1)
   (1-x) (x-1)
   2=1, 20=1
```

The 3 factors of polynomial place Sum 06 2000 = 2+1+1 = 4 --- (1) = Product of zeros (6nce) = [(2x1)+(1x1)+(1x) = 2+1+2 = 5 --- (ii) = Product at a time = 2x1x1 = 2 --- (iii) From the formula we can say that: = Sum of 30 you = -6 = - C-4) = 4 --- civ) = Product of zeros Conce) = c 5 5 5 --- (V) Product at a time = -d = -(-2) = +2 --- (vi)

```
tence (i) = (iv)
   ciis = (v)
   (iii) = cvi)
: 94's verified
(2) Sum of Jeros = 2
                               (4 mark)
   Sum of the Product = -7
    Product of 26201 = -14
 = 3 som general form weget:
  = X3- (9+B+A)X5 + (3B)+ (B+A)+ (A+9)]X - (9BA)
  = 23-(2)22+(-7)2 -(-14)
  = 33-222-72 +14
 -: Polynomial is 23-222-72+14
                            (5 masks)
 (5) cow of 26,000 = 5
    from of beognit of 36207= -1
    Product of 3000 = - 14
  = we know that,
  = Sum of 26,201 = -0
  = 2K = -6 \quad (K is constant)
  20 6=-2K 8 Q=K
```

Good sum of product = C -710 C = C=-7K broduct of Jerros = -0 = -14= -d = a= 14K Now brom the standard form wo get i = 0x3 + 6x2 + cx + d kx3 + (-2kxx2) + (-7kxx) + 14k kx3 € -2Kx2 -7Kx +14K KCx3-2x2-7x+14)=0 -: x3-2x2-7x+14 (3) p(x) = x3-3x2+x+1 Je801 = a-6, a, a+6 = som of 26,802 = - (-2)

trom formula we get? = sum of zeros = (a-6+a+a+6) = 30 = 3 a=1 = 620gnct of 26207 = = or Product = -1 = -1 = las 3000 pormula we get: (a-6) (a) (a+6) =-1 Ca2-62)(a) = -1 C15-05) (1) = -1 1-62=-1 -62=-1-1 +62 = +2  $6 = \sqrt{2}$ · a= 4 8 6= \\ \frac{1}{2}

CHO P(x)=x4-6x3-26x2+138x-35 30x05 = (2+53)(2-53) = ESUM OG 38705 = 2+53-53+2=4 = Product of 30001 = (2+53) (2-53) = 4-3=1 = Jron the formula we get: = x2 - C4)x + C1) = x2 -4x+1 x2-2x-35 x2-4x+1/x4-6x3-26x2+138x-35 -x4+4x3 -x2 -2x3-27x2+138x  $+2x^{3} - 8x^{2} + 2x$   $-35x^{2} + 140x - 3x$   $+35x^{2} - 140x + 31$ x2-2x-35 = 22-72 +520-30 = x(x-7) 5 (x-7) = Cx+5) Cx-7) = x=-6 9 x=7 : All the zeros are = -5, 7, 2+53, 2-53

p(x)=x"-6x3+16x2-25x+10 q(x)= x2-2x+K x(x) = x+ac K= 7 a=? x2-4x + (x-k) x2-2x+K x4-6x3+16x2-25x+10 - x4 +2x3 - Kx2 -4x2 + (16-K)x2 -25x +4x3 -8x2 + 4Koc  $-(8-K)x^{2}+(-2L+KK)x+10$   $-(8-K)x^{2}-(-16+2K)x-8K-K^{2}$ (-9+2K)x + 10-8K+K2 = we have: r(x)=x+a = (-9+2K)x +10-8K+K" = x+a : comparing the eq: = no dot (-9+1K)=1 2K=10 Kos · Also : as 10-8k + k2 92 10-40 +25 Q = -5