	Homework #(2-x)(1-x) = (x) } STOW	Waltak
	(5-X) + (1-X) = (X)/7 M+1	351
	5. e. Rearrouge the function to amelorate	
	loss of significance error.	
	$f(x) = \sqrt{4 + x^2 - 2}$	
10	$(\varepsilon - x)(x - x)(1 - x) = (x)2 \qquad \varepsilon = (x)$	N
1.00	when xx is near 0 we are subtract	ing
	2 nearly identical numbers which	
	reads to (05) - of - significance esto	γ.
	leads to $1055-0$ f- significance error = $\sqrt{4+x}$ - 2 $(\sqrt{4+x}$ + 2)	
1	now we (cs. x+PV) gotern high orl	
ě	we likt term of the product rike	
	(1-x) the (x-1) 4-1xite susmise	
	x(\(\frac{4+\times +2\}{}\)	
	·	
	+= (H-X)(4-x)(e-x) = (x)17 H=N	
	V4+xe-5(2-)1- =(1)17	
	DIXOJ - = (1-01) 5 - = (4.02+1) 5.	
	2.3.11 let $f(x) = (x-1)(x-2)\cdots(x-n)$ $f(x) = (x-1)(x-2)\cdots(x-n)$	
	estimate f ((+10") w/XT=1 for	
	n = 2,3/ 5 125-1-	
	Part of the state	
	Pecale equ 2.43 which states (from	MV7)
	(xx) = f(xx) - f(xx)(xx-xx)	
	= -1 (-2)(+3)(-3)	
	0.51- =	
\	F(1+10-4) = -120×10-4	
	V VIIII	

```
10 x 2 f(x) = (x-1)(x-2) = show when the
   188 \text{ NAM} \quad f(X) = (X-1) + (X-2)
       5. e (1-4041) [ = 0 = (4014) ].
       \frac{1}{5} - \frac{10^{-4}}{10^{-1}} = (x)^{\frac{1}{4}}
1 = 3 \qquad f(x) = (x-1)(x-2)(x-3)
      (X-2)(X-3)+(X-1)(X-3)+(X-1)(X-2)
        2 really 5 = Qto p (5-) Louis ( 45) Filmer
       F(1+10-4) = 0+2(10-4) = 2×10-4
                     = 14+x -2 (14+x
        now we can see a potern treat only
        the first term of the product rule w/o the (x-1) will survive
        thus
                           X/14+X+2
        n=4 f(x)= (x-z)(x-3)(x-4) + ...
                 f1(1) = -1 (-2) (-3) = -6
                 f(1+10-4) = -6(10-4) = -6x10-4
    2.3.11 los (x-1)(x-2) ... (x-4) ... (x-4)
        n=5 = f(1) = (x-2)(x-3)(x-4)(x-5)
                    = -1(-2)(-3)(-4)=
                    = 24
   (TVM MOVE) = (44HOT4) = 1024×10-4
        n=6-xf(1)=(x-2)(x-3)(x-4)(x-5)(x-6)
                    = -1 (-2) (-3)(4)(-5)
                f(1+10-4) = -120×10-4
```

```
n=7 f(1)= -120 (-6) = 720 1.
           f(1+10-4) ≈ 7-20 ×10-400
  n=80) 17 f(1) = 720 (-7)= 5040
 -0.5040 -0.5040
           = -0, & -0, &
   n=9 fi(1)= 7100 -5040 (-8) = 40320
          f(1+10-4) = 4.0320
  h=10.0)(f+(1)=140320(-9)=-322560
* 0350ming 6:6120 HI X
n=11 fi(1) = -322560 (-10) = 3225600
      f(1+104) = 322.5600
  n=12 fi(1)= 3225600 (-11)==3548/600
    3 = A - F(1+164) = 0 - 3548.1690 = =
     this the formula holds for N=3
  when n = 8 we have
          f(x) = (x-1)(x-2)(x-3)(x-4)(x-5)(x-6)(x-7)(x-8)
          5 = (01+02+04)
  when x is an integer from 1,2,3,...8
   F(x) is zero thes & 1,2,3,... 83
   are the roots of f(x).
      = a+a2+a4- (1+E4)(a4+5)
```

```
2.4.40cf = (0-) OSI- = (1)17 F=N
          when n=2 5= (a1+a2)
                    5,= fl(a,+a2)
        now sparsing S-52= a,+a2 - fl (a,+a2)
     = (a_1 + a_2) - (1 + \Sigma_2)(a_1 + a_2)
= a_1 + a_2 - a_2 - \Sigma_2 a_1 - \Sigma_2 a_2
                  = - Q, E2 - Q2 E2
     50 eqn 2.50 holds for the N=Z case
     when n=3 5= a1+a2 + a2
       S_2 = f(\alpha_1 + S_2)

(a_1 + S_2)(\alpha_1 + (a_2))
     thus 5-5z = a1 + a2 + a2 - (++ &3) (a1+(1+&2)(a1+a2))
                 * assuming E; Ej 20 Vi, j *
     = a1+a2+a3-a1-a2-a3-ε2a1-ε2 a2-ε3 a3
                - 53a1 - 53 a2 +0 +0
  001/8-78= E2a2 - 52 a2 - E3a3 - E3a2 - E3a1
       = - a1 (52+E3) - a2 ( Ex+ E3) - a3 E3
     thus the formula holds for n=3
                         when n=8 we have
(8-5) (N=4X) (8-5) (3-X) (-X) = (X) =
               S= (a, +az + az + a4)
     8 ... (E15, 54 = 16004 453y NO 2) X Merli
     5-5y = a_1 + a_2 + a_3 + a_4 - (1+ \epsilon_4)(a_4 + 5_3)
= a_1 + a_2 + a_3 + a_4 - (1+ \epsilon_4)(a_4 + 5_3)
```

1

from the last part we have

S3 = a1+a2+a3 + a1(22+23) + a2(22+23) + a3 E3

thus 54= (1+ E4) (Q4 + S3) 50

54= a1+a2+ a3+a4 + a1 (\(\xi_2+\xi_3+\xi_4\) + a2 (\xi_2+\xi_3+\xi_4)
+ a3 (\xi_3+\xi_4) + a4 \(\xi_4\xi_4\)

thus 5-54=-a1(22+23+24)-a2(22+23+24)ag(23+24)- a424.

which also obeys egn 2.50.