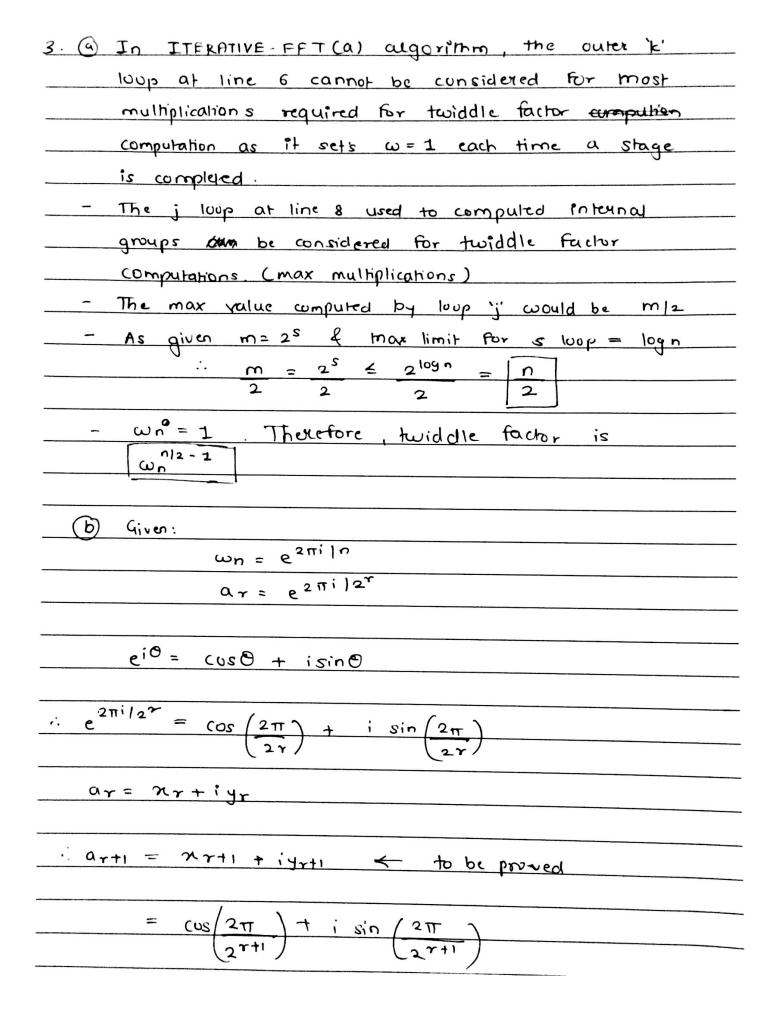
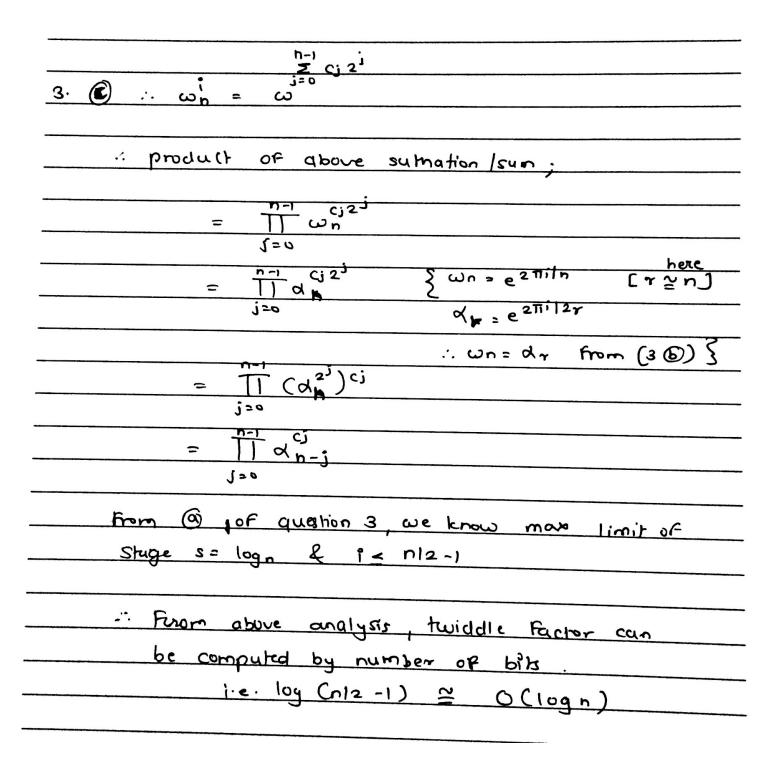
1. In RECU	ISSIVE - 1	FFT(), if the value at line 4	0 F a
algorithm	is is	changed to wn = e 2 Tqiln	rom
e ^{2πi} /n	hen th	eir can be two cases as fol	10 ws :
If the	arcat	test common divisor between a	and n
		be I that means q and n a	
		each other then we will g	
		nts (g) as their is no cha	
the m	dation	.[wz e ^{2πiln}] {permutation	he of original
			vector 3
# Origina	al vec	lur	
7.			[a0]
٦,	11	I ω _n ω ⁿ⁻¹	. a,
: 1			:
3n-ı		$ \omega_n^{n-1} \omega_n^{2(n-1)} \omega_n^{(n-1)(n-1)} $	an
D If q	and	n one divisors of each off	ner then
their	GCD	will not be equal to 1 an	d the
original	vceh	or can loose some permu	tations
of one	inal v	vector.	

<u>- · </u>	±11									
2 .	In ITER	ATIVE	-FFT()	algori	thm K	اد داه	will k	ne e	xecuted	
	nlm time	r an	d loop	ွဲ ယ	il be e	xecuted	ml2	- tim	අ .	
	:. Twiddle	e fac	lor for	each	iteration	سااس	لو ون	mpuh	ed 🖴	
	n×	m	<u> </u>	∡ 2 ^S	= 0	* 2 ^{S-1}	2	n		
	m	2	32	2	25			2		
	where	m =	2 ^S							

compute all powers < m/2 of wm before k loop
(line 6).
Algorithm: ITERATIVE-FFT-UPPATED (a)
1. BIT-REVERSE - COPY (a, A)
2. n = a.length // n is power of 2
3. for s=1 to log n
$-4. m = 2^{5}$
5. ωm = e ^{2πί m}
6. F[0] = 1 // initialize twiddle factor &
set index 0 value to 1
7. for x = 1 to m12-1 do
8. F[x] = F[x-1]. ωm // ω ε ω.ωm
g. end for
10. For k = 0 to n-1 by m do
11. for j=0 to m12-1 do
12. k = F [j].A[k+j+m/2]
13. u = A[k+j]
A[k+j] = u+t
15. A[k+j+ m12]=4-E
16. end for
17. end for
18. end for
19. return A
•
- Twiddle factor computed = 25-1 times & from line 6 to 103
1200010 12010 William 2 limes 5 live 6 to (0 }



. 😥			
3 · (b) = cos (3	$\frac{2\pi 2^{r} }{2}$	t isin (2	211/27
			-
As we know;		1+ (050	
	2_	Y -	<u> </u>
$\sin 2\theta = 2\cos$	0. sin 0		
: sin 0 = sin	20		<u> </u>
2 (us O		
from O & Q.			
		· · ·	sin (217/21)
art1 = 1.	2	2.7 + 1	2 (211/27+1)
\ <u>\</u>			201 (211/2)
= 13	105 2 211	(2^{γ}) + i	<u> </u>
	2		2. Xr+1
ar+1 = xr	41 + i	4 + 1	
		JT	
@ 0: a.v. 0		13 6	
@ Binary Represe		01+3 OF 1	having k bits
can be repres	ented as;		
h ~1			
i = \(\bar{\bar{\bar{\bar{\bar{\bar{\bar{\bar	bj 23	& Polynomia	1 in variable n
7±0			algebric field is
where,			
b; belongs to s	30,13	A (n)	= \frac{\sigma}{2} a function
•			j=0
binary set.			



3. @ We know, F[K] = wh from 6 40
- Pre computation of table f of required twidle
factors for both RECURSIVE - FFT and ITERATIVE-FFT
as mentioned in 6 part
(1) Algorithm: RECURSIVE-FFT-UPDATED (a)
1. n = a.length
$2.$ if $n=1 \rightarrow \text{return } a$
3. end if
4. wn = e 271/n
5. ω = 1
$= (a_0, a_2 \dots a_{n-2})$
7. a[1] = (a, a3, an-1)
y[0] = RECURSIVE - FFT - UPDATED (a [0])
9. y[i] = RECURSIVE - PFT - UPDATED (a[i])
10. For k = 0 to n12-1
II. YK = Yk + FCEJYK
12. Yk+n 2 = Yk - T[k]Yk
13. end for
14. Return 4 4
@ Algorithm: ITERATIVE- FFT - UPDATED (a)
1. Bit-Revence - Copy
2. n = a.length
3. for s=1 to logn
4. m = 25
5. for k=0 to n-1 by m
6. For j=0 to m12-1
7. t= F[(n*j) m].A[k+j+m 2]
8. 4 = ACK+j)

] = u+t		
m 2] =	u-t	