	1.a) Need to prove: 3C>0 and no>0 such 2.0	f(n) Ew(q(n))	
	that 0 ≤ 12n3+11n2+10 ≤ cn3, for all n>no	- lim In n=po (log n)2	
450 - 100	0 = 12n3+11n2+10 = 12n3+11n3+10n3, for nz 1	- lim Ini	
	\$ 33 n ³)	1 legn	
3 2	C=33. No=1	= lim Jn	
	: Dn3+11n2+10 € O (n3)	Thosa 4 logn	
	b) Need to prove: 2C>D and no > D, such that	- 1:m = 1 n =	
	10 0 = Cn3 = 12 n3 + 11 n2 + 10, for all nano	- h-200 4	
	$0 \le N^3 \le 12N^3 + 11N^2 + 10$, for all $N \ge 1$	- lim Jn	
2147	of 12 C=1 no=1	h->00 8	estate (
	12 n3+11n3+10ES(n3)	= 00	
	c) Need to prove 201, 6,50 and 1500, such that	: L=a	
	0 < C1 n < 12 n + 11 n + 10 < C2 n 3, for all n > no	2. In ewologny	
		b) f(n) ∈ O(g(n))	
	A La C1 = 11, C2 = 33, No = 1	$\frac{1}{1-1} \frac{1}{1-1} \frac{1}$	
-8-E	$= (12n^3 + 11n^2 + 10 \in \Theta(n^3))$	3n2+4n3+5n	
	d) Need to prove for all C/2 no 20, such that	1 = (0s 2 in = 1	Hn ³ retir
	0 = 1000n < c(nlogin), for all nono	= 2 = 2 (052n ≤ 2	
	(= 1000 × dogn (= 1)	3 5 5 + 2 (082 m 5 7	urson
	(1000 < 105 N ((1) N) +	[= 12 3 n3 / 10 h	n 7n3 3n3+4n3+5n
	ec < n = (3 1) - (7)	= 4 to 7	
	1. N= max {1, e= }	0 <l<0< td=""><td>- 4</td></l<0<>	- 4
	1, 1000 n €0 (nlogn)	- 13(5+20052n) € A(3n)	+4n3+5n)
	e) Meed to prove: for all c, I no 20, such that 3.60	False, consider find = n, s	cn) = so, it odo
at and the second	$0 \leq C(v_{so}) < v_{N}$	If gan is old, fins in, co	(n)=((n+1), if eve
	loge+20logicenlogin in fishere(-)		
	(20-n) log n < - log C		find wigin)
	(n-20) log in > log (We need to prove f(n) + O(g	
	Ac Marchan Li	fin) \$52 (g(n)) to show for	
		If fin & O(gin), then, 7. no>o	
		that (tn) scg(n) for all n > n	
		cg(n)=C, n>c, f(n)	
		f(n) E O (g(n))	V.,
The second second	in the second se	-: fin) E O(gin) and gin) EW(gin) +	> frace of (gin)
9			

	b) True (core water) (& & day con	5. a) 2"
	대 L 이 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은	b) morst case = n+1
		Example: N=4, V=[0,0,0,0]
		sin this case i is initially = 1
	70 70	1 + of s than will be add up to 5.
	W. W. H. W. C. V.	1 50 5 GHE and from 1 to 5, print
	The Friends - Little och	print totines of "Helb world!"
		thop calls to prat = n+1
	THE THE PARTY OF T	CO SANDERCI - SA 50= 4+1
	3 X6-4	which is match to worst case intl
5		Worst case H of calls to print: n+1
	Do sold the Colombia	c) S. denote the subset of size n
		for which the number of rolls to prot
	4. ((note) 000 (not) (do plan of seven and	
	(NEX20020)	can be imputed for a size i.
	4. S(n)= ===================================	ENIGO For example = 3, then are 3=8.
<u> 1977 - 1989</u>	$S(n) = \left(1 \cdot \left(\frac{1}{2}\right)^{2}\right) + \left(2 \cdot \left(\frac{1}{2}\right)^{2}\right) + \cdots + \left(n \cdot \left(\frac{1}{2}\right)^{n}\right)$	CARROLL Si=21 Longh
, a	(2) + (n · (1))) - 1 × 2,20
5	$2S(n) + S(n) = \left + \left(\frac{2}{2} - \frac{1}{2} \right) + \left(\frac{3}{4} - \frac{2}{4} \right) + \dots + \left(\frac{n}{2^{n-1}} - \frac{n-1}{2^{n-1}} \right) \right $	$=\frac{1}{n}\times(2^{1}+2^{2}+\cdots+2^{n})$
kert v		$=\frac{1}{n} \times 2(2^{n}-1)$
	$=(1+\frac{1}{2}+\frac{1}{4}+\cdots+\frac{1}{2^{n-1}})-(n(\frac{1}{2})^n)$	$=\frac{2}{h}(2^{h}-1)$
	$= \sum_{i=0}^{\infty} (\frac{1}{2})^{i} + N(\frac{1}{2})^{n}$ $= \sum_{i=0}^{\infty} (\frac{1}{2})^{i} + N(\frac{1}{2})^{n}$ $= \sum_{i=0}^{\infty} (\frac{1}{2})^{i} + N(\frac{1}{2})^{n}$	1 - A LOS BOX ELLS
Carpe of L	NE) A) (al = + 7 (1-12) - N(12) N	(1) play () Dry (Gga)
1,602 00	$= \frac{(-(\frac{1}{2})^n)}{\frac{1}{2}} + n(\frac{1}{2})^n$	ine allowed and of historia
Tight in the	$=2-2(\frac{1}{2})^{n}-n(\frac{1}{2})^{n}$	77 7 (04 725 .)
(6002 10 b(-1)	=2+(n+2)(½)"	100 N 2 8 105 2 3 30 1
CANDIA 4.		101-21/00 (non)
10 ((0)	DO A CODY DOOR OF THE WORLD FOR THE DAY	Dec 2000 (6.1) -
1 To Angle La	int make of compility (m)	
de as by	En E whichonormal II	
NE Care Train	usn the set Colgo 2000 Jolf	
CAN G V	alti san ofara	
	T. franciary	
(Amily 112(N))	Carpin Deal for (1000) 360 }	
and the same of th	Mary Committee of the C	

2 (Cot = 1388 5=4 C2) 6. S at the beginning of the program will only have 2 type of value, either = 3M = = (C1+ = 2010 1=1388 (2+C2) even or odd integers. Cosel, So = 0, program will terminate. = & (C1+1244:C2) Case 2, So > O, and for the norse = 3nC1+ 1244 C2 & case, which is everytime offer Six1=Si/4 Siti is odd which need to be got times by 2, then it will become to even. =3nC1+1244(23n(3n+1) E0(n2) Then divdely 4. So for the worst case, the Sidemand 8, a) So first we convert the array to at last can be written as: Si=15m (=): 50 = 0 a tree structure (in algorithm mot whore the program will terminate at real convertion) We set the height: O for root. And check if it's great that point. Therefore the code fragment will always or aqual to c. If yes, we print the root and call this function again terminate. by give the height: h=2×h+1 for left node and h=2xh+2 for the right node. Also we need to check if h is in the range . If no, we do not I return, end this line. But might have other line process after this. Therefore the program will print numbers > c and once next cenu. end recursion for I subprocess. Therefore the running the of my algorithm is OCK), where k is the number of integer reported outputted.

