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	Section: 02
	HW#: 2
	version: A
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	Sex ragged we so that he had a second
	#1: Prove that 2 ⁿ > n ² for every positive
	Integer n when n = 5
	Base Case:
	$n=5: 2^5 > 5^2$
	32 7 25, which is true.
9	
	Assume true for 2 × > K2
-	THE SHALL STANDER OF STREAM LEADING
	Prove true for 2k+1 > (K+1)2:
	Consider:
	$2^{k+1} - (k+1)^2 = 2 \cdot 2^k - (k^2 + 2k+1)$
	= 2K+2K-(K2+2K+1)
	$2^{k+1} - (k+1)^2 > 2^k + k^2 - (k^2 + 2k+1)$
	$>2^{k}-(2k+1)$
	$2^{k+1} - (k+1)^2 > 2^k - (2k+1) > 0$
	$2^{K+1} - (K+1)^2 > 0$
	2K+1 > (K+1)2
13	Statement is true for n ≥ 5
and,	By PMI, 2" > n2 for n = 5
	3

@	
	#2: Prove that 4h-1=3k
	(k is legit and not "n" Results will always be
	divisible by 3)
- i a mail effect of the said the shall dispose a rise commente and the sheet content	Base Case:
	Base case: $N = 1: 4^{(1)} - 1 = 3k \rightarrow 3 = 3k K = 1$
	$N=2: 4^{(2)}-1: 3k \rightarrow 15:3k k=5$
	The state of the s
	Assume true for 4t-1=3k
	Prop 6 and a second second second
	Prove true for $4^{t+1}-1=3K$:
	4 ^{t+} -1=3K
	4.4t-1=3k
	$(3+1)4^{t}-1=3k$
	$(3+1)4^{t}-1=3K$ $3\cdot 4^{t}+4^{t}-1=3K$
	The standard of the standard of the standard
	:. 3.4 is divisible by 3 and 4-1 was
	assumed
	(136 - 1 - 3 - 36 - 36 - 31 - 136.
	J. 19 (See 19 3 24-12 8 41) 3 () 4 ()
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	Canas to the Turk we to

	Base Case:
	N = 1 : 1(1+1) = 1+1
	$\frac{1}{100} = \frac{1}{2} \sqrt{3}$
	1.2 2
	Assume for $1.2 + + \frac{1}{K(K+1)} = \frac{1}{K+1}$
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Prove for $\frac{1}{1 \cdot 2} + \cdots + \frac{1}{k(k+1)} + \frac{1}{(k+1)(k+2)} + \frac{1}{k+2}$
	$\frac{K}{K+1} + \frac{1}{(K+1)(K+2)} + \frac{3}{K+2} + \frac{1}{(K+1)(K+2)} + \frac{3}{K+2}$
~	K+1 (k+1)(K+2) K+2
	(k+2) K , ! ?. K+!
	(k+2)k+1 $(k+1)(k+2)$ $k+2$
	$K^2 + 2K + 1$? $K + 1$
	(k+1)(k+2) $k+2$
	(4,1)/4,1) 0 1,1
	$(k+1)(k+1) \ge k+1$
-	(k+1)(k+2) $k+2$
	$\frac{K+I}{K+I} = \frac{K+I}{K+I}$
	K+2 K+2
-	By P.M.I., 1.2 + + n(n+1) = n+1
	· · · By P.M.I., 1.2 + · · · + n(n+1) n+1
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4		
*	Code Complexity:	
	#4:	
	Sum = 0; (1)	
	for (i=0; i <n; (2n+2)<="" i++)="" td=""><td></td></n;>	
	for (j=0; j <n, ((2n+2)="" j++)="" td="" ×n)<=""><td></td></n,>	
	++ Sym, (n2)	
	The second second second	
	$Total = 1 + 2n + 2 + 2n^2 + 2n + n^2$	
5-3	$= 3n^2 + 4n + 3$	
	The state of the s	
	Big Oh speed: $O(n^2)$	ights delivered was
	Les all the same of the same o	
	#5:	
- 10-00-00-00-00-00-00-00-00-00-00-00-00-0	Sym=0; (1) for $(t=0; t< n; t+=2)$ $(2n+2)$	
-134	for $(i=0; l < n; l+=2)$ $(2n+2)$	
	$tor(J=0; J < n; J++) \qquad (2n+2) \times II$	
	++ Sum; (n2)	
	T. 1. 1. 2 2. 2. 2. 2	
	$Total = 1 + 2n + 2 + 2n^2 + 2n + n^2$	
	$= 3n^2 + 4n + 3$	_
	Big Oh speed: O(n2)	
	big on speed ([O (11-)]	

	#6:	
	Sum=0;	(1)
	for (i=1; i <n; i*="2)</td"><td>$(1+109_2(n)+1+109_2$</td></n;>	$(1+109_2(n)+1+109_2$
	for (i=0; j <n; j++)<="" td=""><td>$(2n+2) \times \log_2(n)$ $(n) \times \log_2(n)$</td></n;>	$(2n+2) \times \log_2(n)$ $(n) \times \log_2(n)$
	++ sum;	(n) x log ₂ (n)
	Total = 1 + 2 + 2109 a(n) + 2n/	092(h) + 21092(h) + n 1092
	Total = $1 + 2 + 2\log_2(n) + 2n\log_2(n) + 4\log_2(n) + 3\log_2(n) + 3\log_2(n)$	3
	Big Oh speed: [O(nlogn)	
	Dig on special feet thought	4
	KA.	
0	#7:	(1)
Ŋ	Sum = 0; for (i=0; i <n; i++)<="" td=""><td>(2n+2)</td></n;>	(2n+2)
n ²	for (j=0; j <i*i.j++)< td=""><td>$(1+n^2+1+n^2)\times n$</td></i*i.j++)<>	$(1+n^2+1+n^2)\times n$
na	for(k=0; K <j; k++)<="" td=""><td>(1+n2+1+n2) x n2x</td></j;>	(1+n2+1+n2) x n2x
	++ Sum;	(n^5)
	$Total = 1 + 2n + 2 + n + n^{3} + n + n$	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	$= 3n^5 + 4n^3 + 4n + 3$	2
	Big Oh Speed: 0 (n5)	
()	5. N. State 20 7 No. 1 A. 11 T	