Exercise 7.1 Going back to Example 7.5, suppose you are trying out different pairs of constants C and k that fit the Big- \mathcal{O} definition (the ones we picked there, $C=20$	Exercise 7.2 Use the Big- \mathcal{O} definition to show that 2 is in $O(1)$ and 3 is in $O(n)$.
and $k = 1000$, are not the only ones we could have picked; in fact, an infinite number of such pairs fit the definition.)	(a) We need to show that 2 is in O(1) by finding C, K to fit Big-0 definition.
Suppose you try $C = 5$. Is there a value of k such that $T(n) \le 5n$ for all $n > k$?	Take C=4 and k=0, we obtain: 2 ≤ 4(1) for all n≥0 which is always true
T(n) = 10n + 10000	This is the same as $2 \le C(1)$ for all $n \ne k$ with $k = 4$, $k = 0$ as withesses.
Assume such is exists that T(n) is O(g(n)) with C= 5 as a witness. From the definition of Big-0 notation, we obtain:	Thurestore, 2 is O(1)
10n + 10000 ≤ 5n for all n7k	(b). We need to show that 3 is in O(n) by finding C, 12 to fit big-0 definition.
⇒ 5n	Take C=3 and $\mathbf{r} = 1$, we obtain: $ \leq n \Rightarrow 3 \leq 3$. $n \text{ for all } n \geq 1$
\Rightarrow n \leq -2000 This is invalid since n (the size of a program's input) cannot be negative.	which means 3 & C.n. for all n7 E with C=3, E= Las witnesses. Therefore, 3 is 0(n).
Therefore, there exists no such is that satisfies T(n) is O(g(n)) with C= 5.	ipacine, 2 5 vuly.
Exercise 7.3 At the recent annual (and glitzy) event, in front of a live, captive audience, Steve Gates proudly presents MicroAppleSoft's latest computer. He executes	Exercise 7.4 Arrange the following functions by their order of growth from the slowest to the fastest.
a program on an input of size n that takes 1 minute to complete. FastAndLoose Hardware Corp. representative claims that their newest computer will	$5n^4$ 3^n $\log_2 n^6$ $7n$ $89 \log_2 n$ $2n \log_2 n^3$ $n^{8/3}$
run 100 times faster than MicroAppleSoft's latest machine.	
What size input can FastAndLoose's computer execute in one minute for each algorithm with the following growth rates?	$89 \log_2 n^6 < 7n^6 < 2n \log_2 n^8 < n^{80} < 5n^4 < 3^{n^6}$
(a) n (b) n^2 (c) n^3 (d) 2^n	
(a) 100n	
(b) $100n^2 \rightarrow size$ input = $10n$ (c) $100n^3 \rightarrow size$ input = $\sqrt[5]{100n^3} \approx 4.64n \approx 5n$	
(c) love \rightarrow size input = 1000 \approx 7.6 Th \approx 5th (d) size input = $x \rightarrow 2^x = 100.2^{n}$	
$\Rightarrow x = \log(100.2^{W}) = \log_{10}^{2} + w \log_{2}^{2} = 2\log_{10} + n \log_{2}^{2}$	
Exercise 7.5 Show that n^2 is not in $O(n)$.	
Suppose that n² is O(n) then by big-0 definition, there is such C and E that:	
$n^2 \le C.n$ for all $n \ge n \le C$ for all $n \ge n$	
This cannot be true no matter how large the constant C is because n can be	. 9 -
It follows that no such C, ic exist that meet the Big-O definition, showing	TRACT 1 IS NOT USAY.
Exercise 7.6 Let $T(n) = 1 + 2 + 3 + + n$. $T(n) = \frac{n(n+1)}{2} = \frac{n^2 + n}{2}$	
(a) Is it true that $T(n)$ is $O(n^3)$?	
(b) Is it true that $T(n)$ is $O(n)$?	
(c) Is it true that $T(n)$ is $O(n^2)$?	
(d) Is it true that $T(n)$ is $\Theta(n^2)$?	2 - The of his of a children in
(a) True \rightarrow Take $k=1$: $1 \le n $ $\Rightarrow n^2 + n \le 2n^5 \Rightarrow \frac{n^2 + n}{2}$.	≤ 1. h thr n-7, 1 → 1(h) is (1(h') with (1c), k)= (1,1) as witnesses
(b) False $ ightarrow$ Suppose that $T(n)$ is $O(n)$, by the Big- $O(n)$ definition, we obtain: $\frac{1}{n}$	$\frac{1+n}{2} \leq C, n \Rightarrow n(n+1) \leq 2C, n \Rightarrow n+1 \leq 2C \Rightarrow n \leq 2C-1$
This connect he drive no mother have locale the amediant C is because a san he	active rive local Ti follows that we auch C to exict that most the definition of Rive D. chambra that T(n) is not O(n)
	orbitrarily large. It follows that no such C, is exist that mast the definition of Big-O, showing that T(n) is not O(n).
(c) True \longrightarrow Take $k= \cdot \leq n \Rightarrow n \leq n^2$ $\Rightarrow n^2 + n \leq 2n^2 \Rightarrow \frac{n^5 + n}{2} \leq n^2 \leq n$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) True \longrightarrow Take $k= \cdot \leq n \Rightarrow n \leq n^2$ $\Rightarrow n^2 + n \leq 2n^2 \Rightarrow \frac{n^5 + n}{2} \leq n^2 \leq n$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $\int_{-1}^{2} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le$	
(c) True \longrightarrow Take $k= \cdot \leq n \Rightarrow n \leq n^2$ $\Rightarrow n^2 + n \leq 2n^2 \Rightarrow \frac{n^5 + n}{2} \leq n^2 \leq n$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $\int_{-1}^{2} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) TrWL \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $\frac{1}{2} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^3 + n}{2} \le n^2 \le n^2 \le n^2 \le n^2 \le n^2 \le n^2 \le 2n^2 \le 2n^2$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) True \longrightarrow Tare $k=1$: $1 \le n$ $\Rightarrow n \le n^2$ $\int_{-\infty}^{\infty} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le n^2$	1. n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, \kappa) = (I,I)$ as witnesses. $\frac{1}{n^2} \neq 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n$: $\Rightarrow n \le n^2$ $\int_{-\infty}^{\infty} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le n^$	$\ln n^2$ for $n \ge 1 \Rightarrow T(n)$ is $O(n^2)$ with $(C, E) = (I, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $1 \ge n^2 + n \le 2n^2 \Rightarrow \frac{n^4 + n}{2} \le n^2 \le n^$	1. n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, \kappa) = (I,I)$ as witnesses. $\frac{1}{n^2} \neq 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n$: $\Rightarrow n \le n^2$ $\int_{-\infty}^{\infty} \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le n^$	1. n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, \kappa) = (I,I)$ as witnesses. $\frac{1}{n^2} \neq 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \implies n \le n^2$ $1 \le n^2 \implies n^2 + n \le 2n^2 \implies \frac{n^2 + n}{2} \le n^2 + n \le 2n^2 \implies \frac{n^2 + n}{2} \le n^2 \le n^2 + n \le 2n^2 \implies n^2 + n \le 2n^2 \le n^2 \le n^2 + n \le 2n^2 \le n^2 \le n^2$	1. n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, \kappa) = (1,1)$ as witnesses. 2. $4 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, 1)$ as witnesses. 2. $2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, 1)$ as witnesses. 2. $2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, \kappa) = (4, 1)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $3 \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n^2 $	1. n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, \kappa) = (I, I)$ as witnesses. 2. $e \ge 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $C(\kappa) = (4, I)$ as witnesses. 2. $e \ge 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $C(\kappa) = (4, I)$ as witnesses. 2. $e \ge 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $C(\kappa) = (4, I)$ as witnesses. 2. $e \ge 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $C(\kappa) = (4, I)$ as witnesses.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n^2 + n \le n^2 + n \le n^2 + n \le n^2 + n \le n^2 \le (n^2 + n \le n^2 + n \le n \le n^2 \le (n^2 + n \le n^2 + n \le n \le n \le n \le n^2 \le (n^2 + n \le n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (4, 1)$ as witnesses. $2m : \text{If } d > c > 1$, then n^2 is $D(n^2)$ (b) $\log n \le n \Rightarrow (\log n)^2 \le n^2$ The statement is false.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $1 \le n^2 \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 = n^$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (4, 1)$ as witnesses. $2m : \text{If } d > c > 1$, then n^2 is $D(n^2)$ (b) $\log n \le n \Rightarrow (\log n)^2 \le n^2$ The statement is false.
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+n^2+n^2) \le n^2 \le (n^2+n^2) \le n^2 \le (n^2+n^2+n^2) \le n^2 \le (n^2+n^2+n^2) \le n^2 \le (n^2+n^2+n^2) \le n^2 \le (n^2+n^2) \le (n^2+n^2) \le n^2 \le (n^2+n^2) \le (n^2+n^2) \le n^2 \le (n^2+n^2) \le (n^2+n^2) \le n^2 \le (n^2+n^2) \le n^2 \le (n^2+n^2) \le n^2 \le (n^2+n^2) \le (n^$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True. \longrightarrow Take $k = 1$: $1 \le n$. $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le (n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n \le 2n^2 \Rightarrow n^2 + n \ge n^2 \le (n^2 + n \ge 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True. \longrightarrow Take $k = 1$: $1 \le n$. $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le (n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n \le 2n^2 \Rightarrow n^2 + n \ge n^2 \le (n^2 + n \ge 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True. \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2$ $1 \Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le 4n^2 + \frac{n^2 + n}{2} \le n^2 \le n^2 \le 4n^2 + \frac{n^2 + n}{2} \le n^2 \le n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True. \longrightarrow Take $k = 1$: $1 \le n$. $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le (n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n \le 2n^2 \Rightarrow n^2 + n \ge n^2 \le (n^2 + n \ge 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n^2 \le (n^2 + n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow n \le n^2$ $1 \Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le 4n^2 + 4n \Rightarrow n$ (d) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow 0 \le 4n$; $1 \le n^2 \le 2n^2 \le 4n^2 + 4n \Rightarrow n$ Since $T(n)$ is $D(n^2)$ (part e) and n^2 is $D(T(n))$, $T(n)$ is $D(n^2)$. Exercise 73 Select all true statements from the following choice: $\sqrt{\frac{1}{2}} \frac{1}{2} \frac{1}{2} \frac{1}{2} + 2n + 1 \text{ is not } O(\frac{1}{2} \frac{1}{2} \frac{1}{2} n^2 + 2n + 1).$ True statements based on this theory $\sqrt{\frac{1}{2}} \frac{1}{2} \frac{1}{2} n^2 + 2n + 1 \text{ is not } O(\frac{1}{2} \frac{1}{2} n^2 + 2n + 1).$ Exercise 7.8 True or False: (a) $(n+1)(n-1)$ is $D(\log n^2) \rightarrow \text{False}$ $\log n^2 = 2 \log n \le 2n \le n^2$. (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow \text{False}$ $\log n^2 = 2 \log n \le 2n \le n^2$. Since $(n+1)(n-1)$ is $O(\log n^2) \rightarrow \text{False}$ $\log n^2 = 2 \log n \le 2n \le n^2$. Exercise 7.8 True or False: (a) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow \text{False}$ $\log n^2 = 2 \log n \le 2n \le n^2$. Since $(n+1)(n-1)$ is $O(\log n^2) \rightarrow \text{False}$ $\log n^2 = 2 \log n \le 2n \le n^2$. The methical revealess $2n \le n \le$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $D(n^2)$ with $(C, E) = (1,1)$ as witnesses. $e^2 \le 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses. $e^2 = 2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $D(T(n))$ with $(C, E) = (q, 1)$ as witnesses.
(c) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+n^2+n^2) = n^2 \le (n^2+n^2) = n^$	Let $f(r, r, r, r) = r(r)$, with $(c, k) = (l, l)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + nr}{2}\right) \Rightarrow n^2$ is 0 ($f(n)$) with $C(c, k) = (l, l)$ as witnesses. The $d > c > 1$, then r^c is $0 < n^{-d}$. The shatement is false. The shatement is false. The shatement is false.
(c) True \rightarrow Tarke $k=1$: $1 \le n$: $\Rightarrow n \le n^2$ $1 \ge n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + 4n - 2)$ (d) True \rightarrow Tarke $k=1$: $1 \le n$: $\Rightarrow 0 \le 4n$: $1 \le n^2 \le 2n^2 \le 4n^2 + 4n - 2$ Since $T(n)$ is $D(n^2)$ (part e) and n^2 is $D(T(n))$, $T(n)$ is $D(n^2)$. Exercise 73 Select all true statements from the following choice: $-\sqrt{2106n^2 + 21n + 68}$ is $O(\frac{1}{210n^2}n^2 + 2n + 1)$. Exercise 73 Select all true statements from the following choice: $-\sqrt{2106n^2 + 21n + 68}$ is $O(\frac{1}{210n^2}n^2 + 2n + 1)$. Exercise 73 Select all true statements from the following choice: $-\sqrt{2106n^2 + 21n + 68}$ is $O(\frac{1}{210n^2}n^2 + 2n + 1)$. Exercise 73 Select all true statements from the following choice: $-\sqrt{2106n^2 + 21n + 68}$ is $O(\frac{1}{210n^2}n^2 + 2n + 1)$. Exercise 73 Select all true statements from the following choice: $-\sqrt{2106n^2 + 21n + 68}$ is not $O(\frac{1}{210n^2}n^2 + 2n + 1)$. Exercise 73 Fitue of False: (a) $(n+1)(n-1) = n^2 - 1 = n^2$ (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1) = n^2 - 1 = n^2$ (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (b) $(n+1)(n-1)$ is $O(\log n^2) \rightarrow$ False. (a) $(n+1)(n-1) = n^2 - 1 = n^2$ False $(n+1)(n-1) = n^2 - 1 = n^2$ (b) $(n+1)(n-1) = n^2 - 1 = n^2$ (c) $(n+1)(n-1) = n^2 - 1 = n^2$ Exercise 73 Nutrat describe following transpely same electhed do and what is its interest of the following transpel points of the follow of the following transpel points of the following transpel poi	L n^2 for $n \ge 1$ \Rightarrow $T(n)$ is $0(n^2)$ with $(C, E) = (1, 1)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, E) = (9, 1)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, E) = (9, 1)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with $(C, E) = (9, 1)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is $0(n^2)$ in $(1, 1)$ as witnesses. Let $(1, 1)$ be sometiment is folse. Let $(1, 1)$ be sometiment is folse. The statement is folse. The statement is folse. The statement is folse.
(c) True \rightarrow Take $k=1$: $1 \le n$: $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le (n^2 + 4n \Rightarrow n)$ (d) True \rightarrow Take $k=1$: $1 \le n$: $\Rightarrow 0 \le 4n$ $1 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ Since $T(n)$ is $D(n^2)$ (part e) and n^2 is $D(T(n))$, $T(n)$ is $D(n^2)$ Since $T(n)$ is $D(n^2)$ (part e) and $D(n^2)$. $D(T(n))$ is $D(n^2)$ Since $T(n)$ is $D(n^2)$ (part e) and $D(n^2)$ is $D(T(n))$. $D(n^2)$ Since $T(n)$ is $D(n^2)$ (part e) and $D(T(n)$ is $D(T(n))$. $D(T(n)$ is $D(T(n))$ is $D(T(n)$ is $D(T(n))$. True statements from the following choice:	L n^2 for $n \ge 1$ \Rightarrow $T(n)$ is $0(n^2)$ with $(C, E) = (I_1)$ as witnesses. L n^2 for $n \ge 1$ \Rightarrow $T(n)$ is $0(n^2 + n) = 4(\frac{n^2 + n}{2}) \Rightarrow n^2$ is $0(T(n))$ with: $C(p_1) = (q_1)$ as witnesses. The d $p \ge 1$ $p \ge$
(c) True. \rightarrow Take $k=1$: $1 \le n$. $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 + \frac{n^2 + n}{2} \le n^2 \le (n^2 + n)$ $\Rightarrow n^2 + n \ge 2n^2 \le (n^2 + n) \ge n^2 \ge n^2 \ge n^2 \le (n^2 + n) \ge n^2 \le (n^2 + n) \ge n^2 \ge n$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, E) = (I_1)$ as witnesses. L $n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with: $(C, E) = (I_1)$ as witnesses. Interpolation T is T and T is T
(c) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+4n \Rightarrow n^2 \le n^2 \le n^2 \le (n^2+4n \Rightarrow n^2 \le n^2 \le n^2 \le (n^2+4n \Rightarrow n^2 \le n^2 \le n^2 \le n^2 \le (n^2+4n \Rightarrow n^2 \le n^2 \le n^2 \le n^2 \le n^2 \le n^2 \le (n^2+4n \Rightarrow n^2 \le n^2 \le$	L n^2 for $n \ge 1 \Rightarrow T(n)$ is $0(n^2)$ with $(C, E) = (I_1)$ as witnesses. L $n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(T(n))$ with: $(C, E) = (I_1)$ as witnesses. Interpolation T is T and T is T
(c) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+n^2+n^2)$ (d) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow 0 \le 4n$; $1 \le n^2 \le 2n^2 \le 4n^2$ Since $T(n)$ is $D(n^2)$ (part e) and $n^2 \le n \le 2n^2 \le 4n^2$. Since $T(n)$ is $D(n^2)$ (part e) and $n^2 = 0$ ($T(n)$) $= T(n)$ is $D(n^2)$. Secretar 23 Select all true statements from the following choices: $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68))$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68)$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68)$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68)$. $\sqrt{\frac{1}{2}} (2168n^2 + 21n + 68 \text{ is not } O(\frac{1}{2} (2168n^2 + 21n + 68)$. $\frac{$	Let n^2 for $n \ge 1$ \Rightarrow T(n) is $0(n^2)$ with (C, E) = (1,1) as witnesses. Let $2n^2 + 2n = 2(n^2 + n) \times 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is 0 (T(n)) with $C(E, E) = (n, 1)$ as witnesses. The statement is $n^2 + n = n^2$ (logn) $n^2 \le n^2$. The statement is folias.
(c) True. \rightarrow Take $k=1$: $1 \le n$. $\Rightarrow n \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le 4n^2 + n \ge n^2 \le n^2 \le 4n^2 \le 4n^2 \le n^2 \le 4n^2 \le n^2 \le 4n^2 \le n^2 \le 4n^2 \le n^2 \le n^2 \le 4n^2 \le n^2 \le n$	L n^2 for $n \ge 1$ is $0(n^2)$ with $(C, E) = (1,1)$ as witnesses. L n^2 for $n \ge 1$ is $0(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(1(n))$ with $(C, E) = (4, 1)$ as witnesses. In Eq. (2 $n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n}{2}\right) \Rightarrow n^2$ is $0(1(n))$ with $(C, E) = (4, 1)$ as witnesses. (b) $\log n \le n \Rightarrow (\log n)^2 \le n^2$ The statement is false. n^2 , the statement is false. Other of the array 3n is $0(n^2 - 1)$ is $1 \le 1 $
(c) True \longrightarrow Take $k=1$: $1 \le n \Rightarrow n \le n^2 = n^2 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le (n^2 + n \ge n) = n^2 \le n^2 \le (n^2 + n \ge n) = n^2 \ge (n^2 + n \ge n) $	Let 2 for $n \ge 1$. \Rightarrow T(n) is 0 (2) with $(C, E) = (1, 1)$ as with resets. Let $2n^{2} + 2n = 2(n^{2} + n) = 4\left(\frac{n^{2} + n^{2}}{2}\right) \Rightarrow n^{2}$ is 0 (T(n)) with $(C, E) = (t_{1})$ as with resets. In If $d > c > 1$, then $n^{2} = 0$ of $(n^{2} + 1)$ is statement is foliat. (b) lag $n \le n = 9$ (lag n) $n^{2} = n^{2}$ The statement is foliat. order of the array. The condition of the array of $(n^{2} + 1)$ is not $(C(n))$ in $(n^{2} + 1)$ in $(n^{2} + 1)$ is not $(C(n))$ in $(n^{2} + 1)$ in
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n + n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+4n \Rightarrow n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le (n^2+2n + 6n \le 2n^2)$ $\Rightarrow n^2+n \le 2n^2 \le$	Let n^2 for $n \ni 1$ by $n \ni 0$ (n^2) with $(C, k) = (k)$ as witnesses. Let $2n^2 + 2n = 2(n^2 + n) = 4\left(\frac{n^2 + n^2}{2}\right) \Rightarrow n^2$ is 0 ($n \ni 0$) with $(C, k) = (n \ni 1)$ as witnesses. In . If $d \ni c \ni 1$, then $n^2 \in 0$ of n^2 . (b) $\log n \in n$ is $\log n \in n$ is $\log n = n$. The statement is false. So is $\log n^2 = 1$. In it is $\log n^2 = 1$.
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $n^2 \ge n^2$	Let h for $n \geqslant 1$. \Rightarrow T(n) is $0(n^{h})$ with $(C, E) = (1,1)$ as witnesses. Let $2n^{h} + 2n = 2(n^{h} + n) = 4\left(\frac{n^{h} + nn}{2}\right) \Rightarrow -n^{h}$ is 0 (T(n)) with. $(C, E) = (t_{1})$ as witnesses. When \mathbb{H} is $2n = 2(n^{h} + n) = 4\left(\frac{n^{h} + nn}{2}\right) \Rightarrow -n^{h}$ is 0 (T(n)) with. $(C, E) = (t_{1})$ as witnesses. When \mathbb{H} is $2n = 2(n^{h} + n) = 4\left(\frac{n^{h} + nn}{2}\right) \Rightarrow -n^{h}$ is 0 ($n^{h} = 1$) The spectrum is folder. The spectrum is $n^{h} = 1$ in set $n = 1$ ($n = 1$) $n^{h} = 1$ is $n = 1$ ($n = 1$) $n^{h} = 1$ ($n = 1$) $n^{h} = 1$ is $n = 1$ ($n = 1$)
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+n^2+2n + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+2n + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+2n + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+2n + n \le 2n^2 \le (n^2+2n + n \le 2n \le 2n^2 \le (n^2+2n + n \le 2n \le 2n \le 2n \le 2n \le 2n \le 2n \le$	Let 2 for $n \ge 1$. \Rightarrow $T(n)$ is $D(n^{2})$ with $(C, n) = (1,1)$ as witnesses. Let 2 $2n^{2} + 2n = 2(n^{2} + n) + 4\left(\frac{n^{2} + n^{2}}{2}\right) \Rightarrow n^{2}$ is $D(T(n))$ with. $(C, n) = (t, 1)$ as witnesses. In. If $d > c > 1$, where n^{2} is $O(n^{2})$ (b) $\log_{2} n \le n \Rightarrow (\log_{2} n)^{2} \le n^{2}$ The distribution is folds. The distribution is folds. The distribution of $C(n) = (1, 1)$ $n \ge O(n^{2} - 1)$ $n \ge O(n^{2} -$
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le (n^2+n^2+2n - n - n - n - n - n - n - n - n - n -$	Let 2 for $n \ge 1$. \Rightarrow T(n) is $0(n^{2})$ with $(C, n) = (1,1)$ as witnesses. Let $2n^{2} + 2n = 2(n^{2} + n) = 2\left(\frac{n^{2} + n}{2}\right) \Rightarrow n^{2}$ is 0 (T(n)) with $C(n) = (n,1)$ as witnesses. In If $d > c > 1$, when n^{2} is $0(n^{2})$ (b) $\log n \le n \Rightarrow (\log n)^{2} \le n^{2}$ The swittment is foliat. One of the earny The swittment is foliat. Other of the earny The swittment is foliat.
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $n^2 \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2$ (d) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow 0 \le 4n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 \Rightarrow n$ $n^2 \le n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$ $n^2 \le n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$	Let 2 for $n \ge 1$. \Rightarrow T(n) is $0(n^{2})$ with $(C, n) = (1,1)$ as witnesses. Let $2n^{2} + 2n = 2(n^{2} + n) = 2\left(\frac{n^{2} + n}{2}\right) \Rightarrow n^{2}$ is 0 (T(n)) with $C(n) = (n,1)$ as witnesses. In If $d > c > 1$, when n^{2} is $0(n^{2})$ (b) $\log n \le n \Rightarrow (\log n)^{2} \le n^{2}$ The swittment is foliat. One of the earny The swittment is foliat. Other of the earny The swittment is foliat.
(c) True \rightarrow Take $k=1$: $1 \le n$; $\Rightarrow n \le n^2$ $n^2 \le n^2$ $\Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le 4n$ $n^2 \le n^2$ $\Rightarrow n^2 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2 \le 4n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 \Rightarrow 2n^2 \le 2n^2 \le 2n^2 \Rightarrow 2$	Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h}) = \frac{1}{2}$ with $(S, n) = (1, 1)$ as witnesses. Let h for $^{$
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $n^2 \le n^2$ $\Rightarrow n^1 + n \le 2n^2 \Rightarrow \frac{n^2 + n}{2} \le n^2$ (d) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow 0 \le 4n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 + 4n \Rightarrow n$ $n^2 \le n^2 \Rightarrow 2n^2 \le 4n^2 \Rightarrow n$ $n^2 \le n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$ $n^2 \le n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$ $n^2 \le n$ $n^2 \Rightarrow n$	Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h}) = \frac{1}{2}$ with $(S, n) = (1, 1)$ as witnesses. Let h for $^{$
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le 4n \ge n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le 4n \ge n^2 = n^2 \le n^2 \le 4n \ge n^2 \le n^2$	Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h}) = \frac{1}{2}$ with $(S, n) = (1, 1)$ as witnesses. Let h for $^{$
(c) True \rightarrow Take $k=1$: $1 \le n$, $\Rightarrow n \le n^2$ $1 \le n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le 4n \ge n^2 + n \le 2n^2 \Rightarrow \frac{n^2+n}{2} \le n^2 \le 4n \ge n^2 = n^2 \le n^2 \le 4n \ge n^2 \le n^2$	Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h})$ with $(C, n) = (1, 1)$ as witnesses. Let h for $n \ge 1 \Rightarrow T(n)$ is $S(n^{h}) = \frac{1}{2}$ with $(S, n) = (1, 1)$ as witnesses. Let h for $^{$