Part 1	gent Penter Ligar
fin) & o(gui) -> limn - = fun = (	fin ola) don dole
F(n) E -2 (9(n)) -1 1mn0 f(n)	= 0
Pu) E @ (9u)) -1 02 (1mn-12	f(n) = C Z ds
Buckey	ire yeten
$(a-) F(n) = (n^2 - 3n)^2$ and $g(n) = (n^2 - 3n)^2$	
$\frac{f(n)}{(n^2-3n)^2} = \frac{6}{5}$	= 2 Hospital
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1502-1
lin 1502	= 40
Therefore Fin) & SU(9(n)).	

b-) Pin = n3 and gin) = log2n4
$\lim_{n\to\infty} \frac{f(n)}{g(n)} = \frac{n^3}{(92^n)^3} \Rightarrow \lim_{n\to\infty} \frac{n^3}{(10-3)^3} = \frac{1-146g(10-1)}{(10-3)^3}$
$\frac{3n^2}{1-n} = \lim_{n\to\infty} \frac{3n^3 \ln_2}{4} = \infty$
Therefore fun) & M (9(n))
$C-) C(n) = 5n.leg_2(un) and g(n) = n leg_2(s^n)$ $\lim_{n \to \infty} \frac{f(n)}{s^n} = \frac{5g(leg_2(un))}{s^n} = \frac{5lim}{n! cg_2(s^n)}$
ling gn) gn. leg2(sn) n-100 ntcg25  -100 sling leg5 (un)  - sling leg5 (un)  - hospila)
$\frac{1}{1} = \frac{1}{5} \lim_{n \to \infty} \frac{1}{\ln \sin n}$
$=\lim_{n\to\infty}\frac{5}{\infty}\Rightarrow 0$
Therefore full e a (gun)).

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$\frac{d-1}{d} \frac{f(n)}{a} = n$ $\frac{d}{d} \frac{f(n)}{a} = n$	and $g(n) = 10^n$ $\lim_{n \to \infty} \frac{\log n}{\log n}$ $\lim_{n \to \infty} \frac{\log n}{\log n}$ $\lim_{n \to \infty} \frac{\log n}{\log n} = \lim_{n \to \infty} \frac{\log \infty}{\log n} = \infty$
Theefore	f(n) € n (9(n))
e-) [(n) z	$8n^{3}\sqrt{2n}$ and $g(n) = n^{-3}\sqrt{n}$
lim = 2	$8.2^{1/5}$ . $1/3$ = $\lim_{n \to \infty} \frac{8.2^{1/5}}{n^{1/3}}$ = $\lim_{n \to \infty} \frac{8.2^{1/5}}{n^{1/3}}$ = $\lim_{n \to \infty} \frac{8.2^{1/5}}{n^{1/5}}$
Theefore	Fun) & O (3(n))

for (inti = a; is strong, lead of j'itt)  \$1 - O(n)  This code loops through each element in an array and assigns on empty array to the element tooch assignment operation takes content time. As a result, assignment operation takes content time. As a result, the wost - case time complexity of method A is  O(n) because it loops on times, which is the length of the input array strongy. The time complexi in the first for loop method A is called n times to incourse the size of the strongy. The time complexi in method B; the tetel time complexity is O(n²). In method B, the tetel time complexity is O(n²) Elements are written by calling the teand for loop n times to the size of the stronglexity of method is O(n²)  Con O(n²)  In method C, the first loop calls the second loop (or n times. The Jecond loop loops n times for each with this loop imethod B is called n² times. The time complexity of method B is O(n²). Total time Complexity is O(n²). n² = O(n4). method C's  time complexity is O(n²).	2 (T) (
for (initi = 0; i estrainty, length; itt)  \$ a-) O(n)  This code loops through each element in an array  This code loops through each element to an array  and assigns an empty array to the element toach  assignment operation takes constent time. As a result,  assignment operation takes constent time. As a result,  the wost-case time complexity of method A is the length  O(n) because it loops not times, which is the length  of the input array straining, which is the length  of the input array straining, which is the length  in the first for loop method A is called n times to  measure the size of the straining. The time complexity  in method B, the letel time complexity is O(n²).  The method B the size of the straining of method  is o(n²)  con o(n²)  con o(n²)  in method C the first loop calls the second loop (or  n times. The second loop loops n times for each  uith this loop, method B is called n² times. The  time complexity of method B is O(n²). Total time  complexity of method B is O(n²). Method C's	1 state void method A (Strug strange
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the elen on empty worst case orray, the	hout the element is emp, element, it there on the contract of	loop and ly or not. exits the no emptiones until	it checks when it f loop . In t ty elements I it check . Method E	nds he in the

a Algorithm moux Dif (purcy A) if leight of army A <2; max\_different = orrayA[laght of A-1] - A to] return may different The running time of the algorithm is fixed. Since the string is sequential. There is no need to the first element is always substracted from the icst elevent is a corosso the big of of this algorith is O(1) constent time compexity b-) Algorithm max DIF (crreyA) if length of orcey A < P. return O max-element - proy A(0) min - elevent = array A [0] for 1 from 1 to length of orroy AE1
If array A(i) > max-element max element = orray ACIJ if arrayAC: 2 < min-element min = eloser = orroy ACi] max-dit = max elevent - min-elevent return maxdif