Assignment-1

1) i=n
while i>2:
    i = i^(1/2)
    print(i)

Answers

$n^{1/2^k} = 2$

taking log on both sides.

$\log_2(n^{1/2^k}) = \log_2(2)$

$1 = \log_2(n^{1/2^k})$

$1 = \frac{1}{2^k}\log_2(n)$

$2^k = \log_2(n)$

$\log_2(2^k) = \log_2(\log_2(n))$

$k = \log_2(\log_2(n))$

Time complexity = $O(\log_2(\log_2(n)))$

2) $i = 29$

while $i < n$:

$i = i^{*3}$

Ans

$29^{2^{3^k}} = n$

$\log_n (29)^{2^{3^k}} = \log_n (n)$

$1 = \log_n (29)^{2^{3^k}}$

$1 = 2^{3^k} \log_n (29)$

$\frac{1}{2^{3^k}} = \log_n (29)$

$\log_{2^3} (1/2^{3^k}) = \log_{2^3} (\log_n (29))$

$k = \log_{2^3} (\log_n (29))$

= Time Complexity = $O(\log_{2^3} (\log_n (29)))$

3) $i = 1$

while $i < n$:

$i = 6i$

$\log_6(n)$