Question 2.

Algorithms Assignment 1

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1 Part a

$n^2 = 3.6 \times 10^{13}$
$n = \sqrt{3.6 \times 10^{13}}$
$n = 6000000$

2 Part b

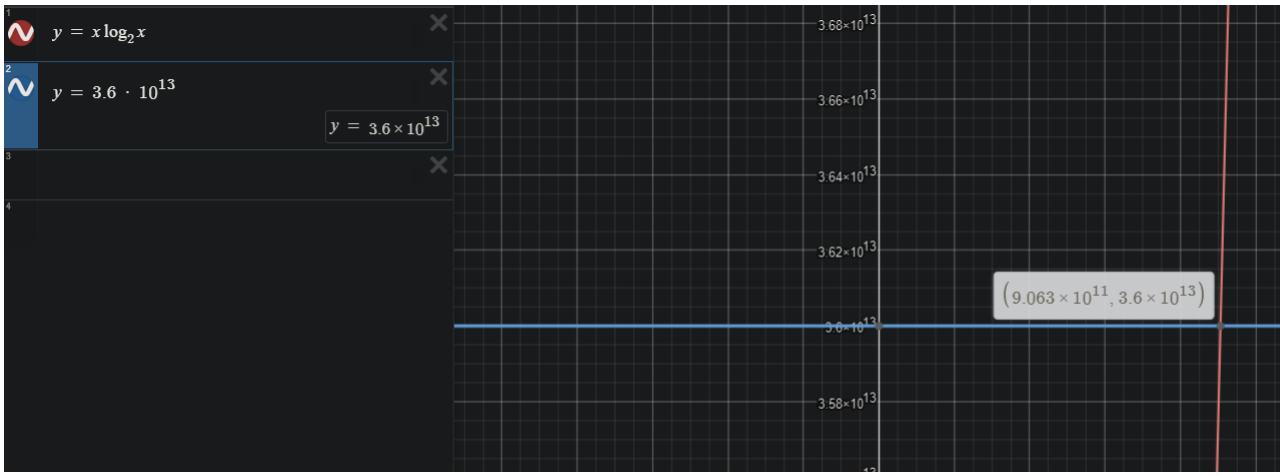
$n^3 = 3.6 \times 10^{13}$
$n = \sqrt[3]{3.6 \times 10^{13}}$
$n = 33019.27$
Assuming integer n (if this is conditional on our n) $\implies 33019$

3 Part c

$100n^2 = 3.6 \times 10^{13}$
$n^2 = 3.6 \times 10^{11}$
$n = 600000$

4 Part d

It is not possible to generate a solution for $n \log n$. We can use a graphical solution instead.



This gives us $n = 9.063 \times 10^{11}$

5 Part e

$2^n = 3.6 \times 10^{13}$
$n = \log_2(3.6 \times 10^{13})$
$n = 45.03$
Assuming integer n (if this is conditional on our n)$n = 45$

6 Part f

$2^{2^n} = 3.6 \times 10^{13}$
Applying logarithm of base 2 to simplify on both sides
$2^n = 45.03$
Applying logarithm of base 2 to simplify on both sides
$n = 5.4929$
Assuming integer n (if this is conditional on our n)$n = 5$