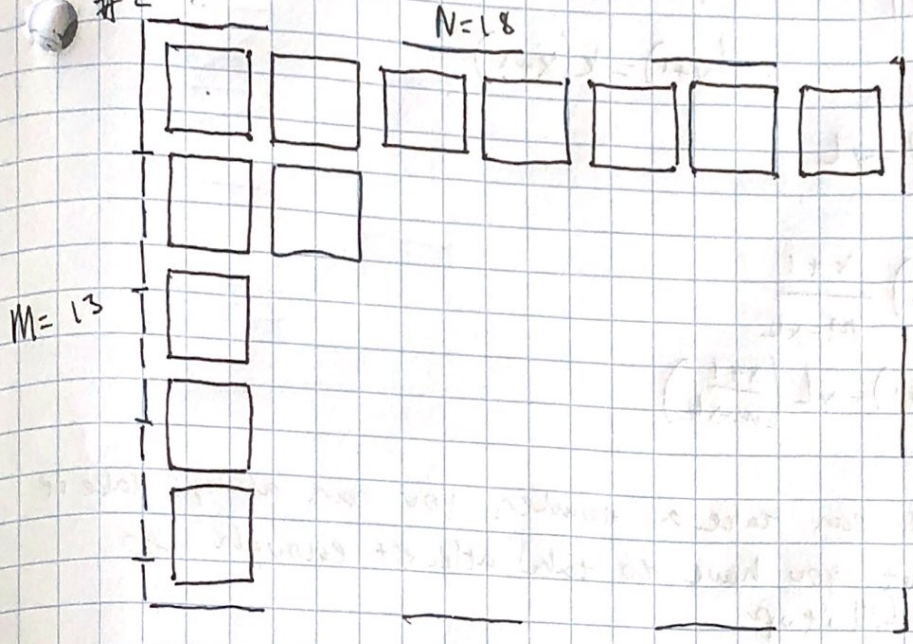
24 Nov 2020 #xc500 last #xjc1644

with are these problem statements

#2



box =  L=2

ans = 0.5

$$xL + (x+1)\,ans = M$$
$$yL + (y+1)\,ans = N$$
$$\max(xy)$$

$$a = \frac{M-xL}{x+1} = \frac{N-yL}{y+1}$$

$$xL + (x+1)\,ans = M = xL + x\,ans + ans$$
$$yL + (y+1)\,ans = N = yL + y\,ans + ans$$

$$\frac{(y+1)(M-xL)}{x+1} = (N-yL)$$

$$x(L+ans) = M - ans$$
$$y(L+ans) = N - ans$$

$$xy = \frac{M-ans}{L+ans}\,\frac{N-ans}{L+ans} = \frac{(M-ans)(N-ans)}{L^2 + 2L\,ans + ans^2}$$

$$= \frac{(-a+M)(-a+N)}{(ans+L)^2}$$

top = roots

bot = asymtotes

both = holes

$$= \frac{(a-M)(a-N)}{(a+L)^2}$$

$a \geq 0$... how to find max of fxn?

vertical asymtote at $-L < 0$ ... so find min answer ... but it must be int

cont #2

$$\frac{M-xL}{x+1} = \frac{N-yL}{y+1} \quad \approx \quad y \approx k(x+1)$$

$$(y+1) = k(x+1)$$

$$(y+1)\frac{M-xL}{x+1} = N - yL$$

$$y+1 = (N-yL)\frac{x+1}{M-xL}$$

$$= \frac{N}{M-xL}(x+1) - yL\left(\frac{x+1}{M-xL}\right)$$

#1 8 4 2 1

2 : if you can take a number, you can always take it

4 : : but you have to take atleast enough to fill it up

3 : : :

1 : : : :

6 : : feels like a prefix or problem? except that's not how OR works

for each query, find a "minimal subset" that satisfies.. then add on other numbers?

1. how to avoid overcount?
2. how to enumerate min subsets quickly?

2 4 3

2 4 3 7

2 4 3 7 6

4 3

4 3 7

4 3 7 6

3 7

3 7 6

7

7 6

wait you can only choose three?

how would you brute force it

```
for(i = l - r) if(!(a[i] | x ^ x))
    ++ mp[a[i]]
```

x = 7

4 4 3 3

→ ~~4 3~~

4 4 3

4 3 3 3

~~4 4 3 3~~

```
x = ⌈x/2⌉
y = ⌈y/2⌉
while (f(x) != f(y))
    if (f(x) < f(y))
        y = y - 1
    else
        x = x - 1
```