-16n-36/n-4\delta<-30

17:23

Olivier Cailloux

0 < 16n + 36/n + (4d − 30)

17:24

Olivier Cailloux

0 < 16n + (4d − 30) + 36/n

0 < 16n² + (4d − 30)n + 36

17:26

Olivier Cailloux

Let’s say d = 0

0 < 16n² − 30n + 36

17:34

Olivier Cailloux

write l for l2bar

17:35

Olivier Cailloux

l²n² + 2ln³ − 2lmn² +3ln² +dn²

l²n² + 2ln³ − 2lmn² +3ln² +dn² − n²

Np

Thesis: 0 < l²n² + 2ln³ − 2lmn² +3ln² +dn² − 2n²

17:36

Olivier Cailloux

write p = ln

p = (m − 2)(m − 1)

/ 2

17:37

Olivier Cailloux

0 < p² + 2pn² − 2mpn + 3pn + dn² − 2n²

17:40

Olivier Cailloux

(2 − d)n² < p² + 2pn² − 2mpn + 3pn

17:41

Olivier Cailloux

(2 − d)n² < p (p + 2n² − 2mn + 3n)

17:42

Olivier Cailloux

K: m − 1 ≤ n

17:47

Olivier Cailloux

Let’s focus on 2n² − 2mn.

Say that n = k(m − 1)

17:51

Olivier Cailloux

Try with m = 5, n = 100

17:54

Olivier Cailloux

Works because p 2n² much greater than 2n²

17:54

Beatrice Napolitano

P^2+3n>2mn

17:56

Beatrice Napolitano

p^2+3pn>2mn

p^2+3pn - 2mn >0

17:57

Olivier Cailloux

p^2+3pn - 2pmn >0

17:58

Olivier Cailloux

p+3n - 2mn >0

approx m² + 3n − 2mn

17:59

Olivier Cailloux

take m = n

Try to prove 2n² < 2pn² − 2mn

18:00

Olivier Cailloux

No. Try to prove 2n² < 2pn² − 2pmn

?

18:02

Olivier Cailloux

Fails for m large.

18:03

Olivier Cailloux

BUT n ≥ m − 1

18:07

Olivier Cailloux

2n² < p (p + 2n² − 2mn + 3n)

18:09

Olivier Cailloux

2n² < p² + n(2pn − 2pm + 3p)

18:10

Olivier Cailloux

RHS ≤ RHS with n = m − 1

18:12

Olivier Cailloux

I mean ≥

f(n, m) = p² + n(2pn − 2pm + 3p)

K: n ≥ m − 1

18:13

Olivier Cailloux

Thus, f(m − 1, m) ≤ f(n, m)

18:14

Olivier Cailloux

Let’s prove that f(m − 1, n) > 2n².

18:15

Olivier Cailloux

This will prove that f(n, n) > 2n² (as f(n, m) ≥ f(m − 1, m))

18:16

Olivier Cailloux

Thesis: 2n² < p² + (m − 1)(2p(m − 1) − 2pm + 3p)

18:17

Olivier Cailloux

2n² < p² + n(2pn − 2pm + 3p)

0 < p² + n(2pn − 2pm + 3p − 2n)

18:18

Olivier Cailloux

0 < p² + n(− 2pm + 3p + 2pn − 2n)

0 < p² + n(− 2pm + 3p + 2n [p − 1])

18:19

Olivier Cailloux

Now I can replace by m − 1

18:20

Olivier Cailloux

We will get a function of m

a0m³ + a1m² + a2m + a3

18:21

Olivier Cailloux

Have to show that it’s > 0 for m ≥ 5.

1) Show that it is > 0 at m = 5

2) Show that its derivative is positive for m ≥ 5

18:23

Olivier Cailloux

2n² < p (p + 2n² − 2mn + 3n)

0 < p (p + 2n² − 2mn + 3n − 2n²)

0 < p (p + n (2n − 2m + 3 − 2n))