**paper sheet**

I-statique:

1.classe d'équivalence N 1:

figure qui explique la forme réelle:

1.1: dimension:

lo1=0.2625(il faut discuter si la longueur est celle de la plaque ou celle le lieu de sorti de la tige)

la1=0.1075

e1= 0.0125

1.2: masse du système:

m1= 0.66984

G1=(la1\*05,lo1\*05,0) dans la base B1

en effet:

plaque

masse de la plaque: mp=0.25243

dimension de la plaque: lop, lap,ep=lo1,la1,e1

centre du gravité de la plaque: Gp=(lap\*05,lop\*0.5,0) dans B1

moteur:

masse moteur : mm= 0.2632

dimension du moteur: masse ponctuelle

centre du gravité du moteur: Gm=(0.25\*la1,lo1,0) dans la base B1

Lm=

lm=

½ charnière:

centre de gravité de ½ de la charnière: Gc=(0,0.0606,-0.5\*e01) dans la base B1

masse de ½ de la charnière: m1/2c=0.15421

L1=

L2=

l1=

l2=

vis:

on néglige la masse des vis ou bien on le integre avec la masse de la plaque vu que: masse vis/ m1 <<<1

\*) on considère le vecteur: deltaG1relative=(0.2866580078824794, 0.13450298578765071, -0.11510957840678372) qui mesure la différence du centre de gravité du système réel- centre de gravité du modèle relativement

on remarque que la variation est négligeable devant le G1 donc le modèle est valide sauf pour la coordonnée selon x1: et dans ce cas G1=( 0.030815735847366535, 0.16655703376925832, -0.0014388697300847966)

le calcul du centre de gravité s’est fait avec le code python: calc\_centre\_gravité.py

2. classe d'équivalence N2:

2.1 dimensions:

R= 0.165

er= 0.003

f=0.02+0.5\*0.0015

G2=(f+la1\*0.5,lo1,0) dans la base B1

2.2 masse du système:

masse de la roue principale: mrp=0.24355

II- dynamique:

!!! Dans le reste du sujet on s'intéresse à l’étude du système à travers le modèle

schéma:

<https://drive.google.com/file/d/14BY3LtLyH6mALK14GgLtd-sMEq_tV7Th/view?usp=sharing>

angles de caractérisation: alpha=(y0,y1)=(z0,z1)

teta= (y1,y2)=(z1,z2)

expression des torseurs cinématiques et des actions mécaniques:

expression des torseurs cinématiques et dynamiques( tout sera accessible grâce au données géométriques)

code utilisé fi pc amine: courbes de determinantion de A1.py

code utilisé fi pc iyed :

les moments d’inertie J(2/1)=A2 et J(1/0)=A1 peuvent être déterminés grâce au modèle et au données géométriques:

mais il faut les mesurer expérimentalement: quelle est l’expérience à faire pour les déterminer ?

pour déterminer A1 expérimentalement, nous avons fait l’expérience du pendule en le lâchant sans vitesse initiale ( sans couple moteur), nous avons ensuite comparé les courbes expérimentales de alpha=f(t) , et les courbes théoriques pour voir si on a l’influence d’un couple de frottement de la liaison 1-0, ensuite nous avons déterminé A2 en négligeant le frottement

les équations du pendule sont:

inertie de la moitié de la charnière:

) = 0.00357

= 0.021196439

= 0.00575391

!! l’inertie de la plaque est inférieure à celle du moteur ce qui peut affecter la modélisation du système. En effet, dans la vie courante l’inertie du vélo est largement supérieur à celle du moteur

=0.030520349

!!

la solution est de la forme :

est l’angle de départ

courbe expérimentale: courbe expérimentale de pendule.png

on trouve : période Tr = 1.3s

par régression linéaire de l’enveloppe, on trouve :

log(aplha\_max)=-

voir image: régression linéaire des sommet (pendule).png

la pente =-0.0783426434646253

f=0.070633

[1.0,

0.48582746367010293,

0.26585617713460102,

0.17802178275142169,

0.13119793720752995,

0.10199256527268677,

0.081669269128292588,

0.06651667412754976,

0.054455980572634649,

0.04437795309913576,

0.035708506571834928]

on s'intéresse au couple moteur à produire:

* on considère un système perturbé
* déterminer l’objectif de l’asservissement
* déterminer le couple moteur à produire

on s'intéresse au moteur:

* ces équations:

* les constantes à déterminer :

r l k Cr0m fm

* les expériences à faire :

r : on a déterminé la résistance r en bloquant l’axe du moteur et en imposant un échelon et on mesurant le courant. On a utilisé ensuite la loi d’ohm . voir classeur1.xlsx feuille1

l : nous l’avons mesuré à l’aide d’un rlc mètre cv avec rlc metre ?

k : classeur1.xlsx feuille2 nous l’avons mesuré en régime permanent en mesurant la vitesse moyenne du moteur et U et i

Cr0 :

fm : 0,1680584091

* résultat:

r=3.24

fm : 0,1680584091

// resolution equation diff moment d’inertie avec numerique

le pendule en boucle ouverte à pour équations:

+

dans le domaine de la place:

+

Rm=3.15

Lm=0.0015

k=1.028

fm=0.16805

A2=0.0033153

A1=0.045721

L01=0.2625

m2=0.24355

A1tilde=A1+A2+m2\*L01\*L01

A2tilde=A1tilde-A2

f=0.070633

lg1=0.16655703376925832

m1=0.66984

Ceq=L01\*m2\*g+lg1\*m1\*g

Rm=3.15;

Lm=0.0015;

K=1.028;

fm=0.16805;

A2=33.153;

A1=0.045721;

L01=0.2625;

m2=0.24355;

A1tilde=A1+A2+m2\*L01\*L01;

A2tilde=A1tilde-A2;

f=0.070633;

lg1=0.16655703376925832;

m1=0.66984;

g=9.8;

Ceq=L01\*m2\*g+lg1\*m1\*g;

CONS4=(A2\*A1tilde-A2\*A2tilde)\*Lm/K;

CONS3=(A2\*(A1tilde-A2tilde)\*(Rm/K)+(Lm/K)\*(f\*A2+A1tilde\*fm));

CONS2=((Rm/K)\*(f\*A2+A1tilde\*fm)+(Lm/K)\*((f\*fm-Ceq\*A2)+K\*f));

CONS1=((Rm/K)\*(f\*fm-Ceq\*A2)-(Lm/k \*Ceq\*fm)+K\*f);

CONS0=-Rm/K \* Ceq \* fm-K\*Ceq;

L1=[-4.71,-8.19,-11.63,-14.98,-18.26,-21.49,-24.64,-27.72,-30.75,-33.74,-36.64,-39.49,-42.29,-45.04,-47.71,-50.34,-52.91,-55.45,-57.93,-60.34,-62.74,-65.05,-67.32,-69.58,-71.76,-73.91,-76.03,-78.08,-80.10,-82.09,-84.02,-85.92,-87.80,-89.62,-91.41,-93.18,-94.88,-96.57,-98.23,-99.84,-101.42,-102.98,-104.49,-105.96,-107.42,-108.87,-110.26,-111.61,-112.97,-114.30,-115.59,-116.84,-118.10,-119.33,-120.52,-121.67,-122.83,-123.96,-125.05,-126.12,-127.18,-128.23,-129.23,-130.21,-131.20,-132.16,-133.09,-133.99,-134.90,-135.78,-136.63,-137.46,-138.30,-139.12,-139.91,-140.69,-141.46,-142.22,-142.93,-143.64,-144.35,-145.04,-145.68,-146.33,-146.96,-147.58,-148.17,-148.78,-149.38,-149.98,-150.54,-151.10,-151.66,-152.22,-152.75,-153.26,-153.78,-154.29,-154.76,-155.24,-155.72,-156.19,-156.64,-157.09,-157.56,-158.00,-158.42,-158.85,-159.28,-159.69,-160.08,-160.48,-160.88,-161.25,-161.60,-161.96,-162.33,-162.67,-163.00,-163.33,-163.67,-164.00,-164.29,-164.60,-164.91,-165.20,-165.47,-165.76,-166.04,-166.30,-166.56,-166.81,-167.08,-167.33,-167.57,-167.81,-168.05,-168.26,-168.45,-168.65,-168.85,-169.04,-169.23,-169.42,-169.62,-169.79,-169.98,-170.16,-170.35,-170.50,-170.66,-170.84,-171.01,-171.16,-171.30,-171.45,-171.60,-171.74,-171.87,-171.99,-172.15,-172.28,-172.43,-172.56,-172.71,-172.82,-172.96,-173.08,-173.22,-173.34,-173.47,-173.59,-173.74,-173.87,-174.01,-174.17,-174.32,-174.47,-174.62,-174.77,-174.92,-175.07,-175.20,-175.36,-175.50,-175.64,-175.76,-175.93,-176.04,-176.20,-176.33,-176.71,-176.76,-177.14,-177.33,-177.58,-177.88,-178.16,-178.46,-178.77,-179.07,-179.31,-179.57,-179.80,179.93,179.68,179.44,179.18,178.91,178.65,178.38,178.08,177.81,177.53,177.27,176.96,176.65,176.32,176.01,175.70,175.39,175.09,174.80,174.46,174.15,173.84,173.53,173.29,172.90,172.61,172.40,172.10,171.82,171.55,171.24,170.86,170.59,170.30,170.02,169.77,169.50,169.20,168.95,168.69,168.41,168.17,167.89,167.68,167.48,167.23,166.99,166.74,166.46,166.15,165.87,165.70,165.53,165.36,165.13,164.90,164.65,164.41,164.17,163.93,163.69,163.49,163.28,163.07,162.89,162.70,162.48,162.27,162.04,161.84,161.66,161.47,161.25,161.06,160.87,160.67,160.51,160.34,160.18,160.01,159.83,159.65,159.53,159.40,159.24,159.06,158.83,158.67,158.53,158.36,158.23,158.09,157.91,157.74,157.62,157.51,157.41,157.26,157.13,157.01,156.87,156.73,156.61,156.47,156.33,156.22,156.12,156.02,155.93,155.84,155.76,155.69,155.61,155.51,155.44,155.36,155.28,155.17,155.06,154.94,154.85,154.80,154.72,154.61,154.50,154.36,154.25,154.14,154.05,153.96,153.88,153.81,153.70,153.59,153.49,153.38,153.27,153.16,153.04,152.95,152.84,152.73,152.62,152.52,152.43,152.33,152.24,152.19,152.10,152.02,151.93,151.88,151.79,151.72,151.65,151.58,151.52,151.47,151.43,151.41,151.34,151.32,151.27,151.24,151.20,151.20,151.19,151.18,151.18,151.18,151.18,151.20,151.25,151.30,151.39,151.54,151.77,152.15,152.63,153.32,154.38,155.55,156.71,157.94,158.87,158.54,159.71,161.05,162.60,164.22,165.16,166.34,167.53,168.77,169.99,171.32,172.61,173.80,174.83,176.15,177.31,178.66,179.76,-178.82,-177.37,-175.91,-174.36,-173.05,-171.65,-170.31,-169.02,-167.56,-166.31,-164.98,-163.94,-162.85,-161.45,-160.24,-159.27,-158.48,-157.74,-156.71,-156.10,-155.50,-154.94,-154.49,-154.06,-153.59,-153.31,-153.06,-153.07,-153.19,-153.28,-151.50,-151.40,-151.60,-151.93,-152.10,-152.51,-153.01,-153.52,-153.93,-154.50,-155.14,-155.82,-156.59,-157.32,-158.25,-159.31,-160.32,-161.35,-162.42,-163.63,-164.89,-166.05,-167.32,-168.61,-169.97,-171.23,-172.48,-173.59,-175.07,-176.54,-178.01,-179.16,179.61,178.39,177.20,176.04,174.83,173.73,172.66,171.69,170.77,169.63,168.67,167.75,166.84,165.85,165.10,164.20,163.47,162.85,162.28,160.66,159.79,159.18,158.53,158.18,157.52,157.07,156.73,156.47,156.28,156.09,155.98,155.93,155.75,155.80,155.89,155.99,156.17,156.38,156.60,156.92,157.27,157.66,158.11,158.55,159.42,160.35,161.25,162.13,161.62,162.90,163.79,164.66,165.40,165.87,166.91,168.02,168.64,169.43,170.42,171.62,172.41,173.37,174.42,175.48,176.48,177.49,178.54,179.55,-179.10,-177.91,-176.70,-175.45,-174.23,-172.95,-171.80,-170.64,-169.40,-168.27,-167.01,-165.94,-164.71,-163.85,-162.96,-161.94,-160.91,-160.11,-159.35,-158.66,-157.85,-157.33,-156.82,-156.34,-155.96,-155.62,-155.41,-155.35,-155.44,-155.44,-153.64,-153.40,-153.21,-153.39,-153.61,-153.85,-154.14,-154.45,-154.80,-155.20,-155.66,-156.24,-156.85,-157.51,-158.18,-159.03,-159.86,-160.71,-161.69,-162.67,-163.65,-164.77,-165.81,-166.88,-168.04,-169.24,-170.75,-171.90,-173.00,-174.17,-175.45,-176.66,-177.63,-178.92,179.73,178.84,177.66,176.65,175.74,174.88,173.91,172.95,171.87,170.85,169.98,169.22,168.44,167.68,166.83,166.17,165.58,165.02,164.33,163.31,162.33,161.88,161.44,161.14,160.64,160.22,159.81,159.56,159.27,159.10,158.96,158.89,158.77,158.79,158.84,158.97,159.13,159.29,159.50,159.78,160.12,160.46,161.09,161.81,162.49,163.00,162.70,163.84,164.87,165.78,166.55,166.74,167.56,168.51,169.31,169.99,170.90,171.82,172.65,173.43,174.27,175.31,176.22,177.08,178.19,179.11,179.99,-178.93,-177.84,-176.77,-175.70,-174.63,-173.21,-172.21,-171.14,-170.17,-169.20,-167.96,-166.90,-166.07,-165.20,-164.20,-163.20,-162.44,-161.72,-161.07,-160.45,-159.87,-158.99,-158.52,-158.18,-157.84,-157.62,-157.09,-157.46,-157.75,-157.67,-157.48,-157.18,-157.25,-157.35,-157.41,-157.57,-157.73,-157.93,-158.21,-158.55,-158.94,-159.38,-159.85,-160.35,-160.90,-161.56,-162.29,-163.01,-163.77,-164.58,-165.45,-166.40,-167.31,-168.16,-169.09,-170.11,-171.27,-171.94,-173.00,-174.05,-175.00,-176.15,-177.39,-178.36,-179.43,179.51,178.61,177.56,176.69,175.85,174.94,174.12,173.28,172.37,171.61,170.80,170.02,169.35,168.72,167.81,167.26,166.31,165.42,164.76,164.07,163.66,163.40,163.08,162.62,162.31,161.94,161.69,161.46,161.28,161.16,161.08,160.96,160.96,161.05,161.33,161.65,161.98,162.32,161.25,161.36,161.63,162.04,162.60,163.10,162.62,163.56,164.48,165.10,165.47,166.24,166.94,167.52,168.11,168.81,169.57,170.39,171.19,172.06,172.78,173.54,174.56,175.38,176.20,177.04,177.84,178.75,179.66,-179.54,-178.59,-177.53,-176.59,-175.61,-174.44,-173.41,-172.45,-171.57,-170.70,-169.55,-168.73,-167.82,-167.02,-166.39,-165.67,-165.05,-164.48,-163.81,-163.32,-162.35,-161.70,-161.20,-160.73,-160.29,-159.92,-159.62,-159.43,-159.26,-159.16,-159.07,-159.13,-159.30,-159.45,-159.69,-160.04,-160.45,-160.96,-160.77,-161.74,-162.63,-163.69,-163.23,-163.95,-164.56,-165.05,-165.69,-166.33,-167.23,-167.92,-168.63,-169.58,-170.27,-171.09,-171.92,-172.72,-173.67,-174.61,-175.62,-176.45,-177.33,-178.40,-179.34,179.67,178.84,178.10,176.98,176.14,175.32,174.64,174.06,173.43,172.61,171.92,171.25,170.48,169.91,169.40,168.75,168.27,167.76,167.33,166.11,165.23,164.83,164.63,164.46,164.17,163.75,163.50,163.24,162.97,162.69,162.61,162.52,162.47,162.44,162.88,162.97,162.86,163.08,163.48,163.81,164.21,164.64,163.81,164.29,164.58,165.12,165.80,165.53,166.32,167.11,167.46,168.00,168.61,169.13,169.80,170.43,171.14,171.86,172.63,173.29,173.88,174.45,175.25,176.07,176.86,177.64,178.38,179.18,-179.96,-179.09,-178.18,-177.34,-176.48,-175.46,-174.62,-173.64,-172.80,-171.95,-171.01,-170.21,-169.49,-168.62,-167.71,-167.01,-166.45,-165.86,-165.31,-164.89,-164.52,-164.00,-163.67,-163.21,-162.98,-162.84,-162.72,-162.70,-162.57,-162.55,-162.57,-162.52,-162.88,-163.09,-162.93,-163.22,-163.52,-163.58,-163.83,-164.09,-164.39,-164.72,-165.09,-165.50,-165.91,-166.37,-166.93,-167.55,-168.27,-168.91,-169.60,-170.36,-171.09,-171.86,-172.65,-173.51,-174.36,-175.09,-175.99,-176.83,-177.68,-178.50,-179.38,179.75,179.01,178.32,177.69,176.87,176.21,175.59,174.95,174.32,173.75,172.93,172.44,171.96,171.45,170.91,170.39,169.80,169.36,169.03,168.29,168.09,167.81,167.39,166.99,166.81,166.61,166.48,166.22,165.75,165.60,165.56,165.60,165.62,165.80,165.92,166.17,166.02,165.67,166.23,166.68,167.21,167.63,167.43,167.92,168.37,168.62,169.02,169.44,169.79,170.20,170.66,171.12,171.58,172.06,172.55,173.15,173.67,174.28,174.97,175.57,176.12,176.77,177.34,178.04,178.73,179.38,-179.99,-179.27,-178.31,-177.62,-176.86,-176.08,-175.36,-174.44,-173.66,-172.90,-172.27,-171.54,-170.82,-170.04,-169.20,-168.73,-168.24,-167.67,-167.04,-166.60,-166.18,-165.73,-165.36,-164.89,-164.60,-164.35,-164.23,-164.09,-164.00,-164.03,-164.10,-164.10,-163.05,-163.24,-163.33,-163.42,-163.40,-163.63,-163.66,-163.90,-164.18,-164.47,-164.76,-165.13,-165.54,-165.94,-166.35,-166.76,-167.27,-167.84,-168.39,-168.89,-169.56,-170.31,-171.04,-171.81,-172.53,-173.26,-173.93,-174.64,-175.51,-176.31,-177.12,-177.93,-178.68,-179.39,179.89,179.27,178.66,177.92,177.32,176.71,176.25,175.70,175.19,174.61,174.08,173.61,173.17,172.71,172.19,171.73,170.84,170.21,169.89,169.58,169.45,169.28,169.08,168.86,168.59,168.14,167.90,167.75,167.68,167.74,167.76,167.96,168.14,168.23,168.43,168.44,168.24,168.62,169.15,169.52,169.37,169.43,169.79,170.01,170.37,170.73,171.03,171.39,171.79,172.18,172.69,173.16,173.54,173.97,174.48,175.01,175.64,176.22,176.75,177.27,177.88,178.43,179.11,179.71,-179.76,-179.14,-178.48,-177.81,-177.03,-176.27,-175.65,-175.02,-174.33,-173.60,-173.00,-172.43,-171.89,-171.26,-170.66,-170.18,-169.68,-169.33,-168.86,-168.44,-168.17,-167.87,-167.65,-167.43,-166.64,-166.77,-166.72,-166.62,-166.61,-166.04,-165.81,-165.87,-165.85,-165.82,-165.85,-165.92,-166.02,-166.14,-166.30,-166.52,-166.75,-167.02,-167.31,-167.63,-167.98,-168.38,-168.71,-169.18,-169.65,-170.07,-170.61,-171.16,-171.64,-172.25,-172.77,-173.42,-173.99,-174.64,-175.26,-175.81,-176.52,-177.19,-177.82,-178.42,-179.00,-179.70,179.68,179.19,178.69,178.09,177.60,176.99,176.43,175.85,175.39,174.94,174.51,174.01,173.52,173.15,172.76,172.37,172.05,171.84,171.57,171.37,171.17,170.92,170.68,170.49,169.88,169.87,169.86,169.84,169.69,169.77,169.73,169.62,169.64,169.70,169.75,169.86,169.97,170.11,170.27,170.41,170.58,170.78,171.01,171.25,171.53,171.81,172.11,172.45,172.76,173.12,173.52,173.89,174.32,174.73,175.15,175.51,175.96,176.52,177.00,177.45,177.93,178.43,178.90,179.47,179.96,-179.53,-178.94,-178.29,-177.68,-177.05,-176.44,-175.85,-175.30,-174.78,-174.23,-173.64,-173.20,-172.70,-172.17,-171.76,-171.41,-171.04,-170.67,-170.26,-169.90,-169.61,-169.36,-169.12,-168.66,-168.46,-168.35,-168.25,-168.21,-168.10,-167.84,-167.74,-167.74,-167.72,-167.73,-167.74,-167.84,-167.97,-168.12,-168.27,-168.45,-168.74,-168.97,-169.46,-169.92,-170.24,-170.34,-170.62,-171.02,-171.39,-171.79,-172.27,-172.72,-173.21,-173.67,-174.20,-174.82,-175.34,-175.85,-176.42,-176.93,-177.53,-178.03,-178.58,-179.22,-179.77,179.64,179.03,178.53,178.07,177.64,177.21,176.72,176.30,175.90,175.52,175.09,174.76,174.33,174.01,173.70,173.44,173.13,172.82,172.50,172.22,172.03,171.85,171.66,171.49,171.30,171.19,171.14,171.12,171.08,171.08,171.15,171.24,171.36,170.93,170.71,170.87,171.09,171.15,171.27,171.49,171.66,171.85,172.06,172.26,172.50,172.73,173.02,173.31,173.59,173.91,174.23,174.59,174.97,175.39,175.67,176.11,176.57,176.93,177.34,177.80,178.16,178.56,179.02,179.46,179.88,-179.61,-179.13,-178.59,-178.01,-177.48,-176.92,-176.49,-176.04,-175.53,-175.16,-174.71,-174.25,-173.83,-173.47,-173.12,-172.71,-172.33,-172.04,-171.77,-171.50,-171.18,-170.95,-170.05,-169.93,-169.80,-169.57,-169.41,-169.32,-169.24,-169.22,-169.21,-169.16,-169.14,-169.25,-169.35,-169.63,-169.90,-170.16,-170.40,-170.58,-170.61,-170.72,-171.16,-171.57,-171.55,-171.79,-172.10,-172.39,-172.71,-173.05,-173.45,-173.87,-174.25,-174.71,-175.16,-175.61,-176.20,-176.69,-177.15,-177.55,-177.93,-178.42,-178.85,-179.28,-179.74,179.83,179.47,179.03,178.65,178.28,177.85,177.48,177.07,176.67,176.33,176.02,175.73,175.42,175.09,175.03,174.87,174.81,174.71,174.61,174.44,174.32,173.87,173.89,174.00,173.97,173.84,173.76,173.66,173.51,173.46,173.46,173.45,173.49,173.51,173.57,173.61,173.68,173.75,173.84,173.95,174.08,174.23,174.40,174.61,174.82,175.02,175.25,175.48,175.73,175.99,176.24,176.50,176.75,177.05,177.36,177.65,177.91,178.23,178.54,178.88,179.25,179.54,179.87,-179.77,-179.39,-179.03,-178.60,-178.20,-177.80,-177.41,-177.02,-176.54,-176.13,-175.65,-175.32,-174.97,-174.61,-174.35,-174.06,-173.72,-173.46,-173.18,-172.95,-172.84,-172.68,-172.51,-172.26,-172.10,-171.96,-171.78,-171.53,-171.33,-171.24,-171.09,-171.16,-171.11,-171.00,-171.07,-171.08,-171.11,-171.18,-171.25,-171.35,-171.48,-171.67,-171.96,-172.09,-172.31,-172.55,-172.80,-173.06,-173.36,-173.55,-173.79,-174.13,-174.44,-174.82,-175.20,-175.38,-175.82,-176.18,-176.55,-176.94,-177.26,-177.62,-177.98,-178.33,-178.79,-179.15,-179.54,-179.91,179.73,179.49,179.22,178.97,178.54,178.21,177.93,177.61,177.35,177.10,176.85,176.63,176.43,176.17,176.00,175.92,175.83,175.74,175.64,175.50,175.43,175.37,174.76,174.74,174.84,174.85,174.89,174.87,174.78,174.76,174.84,174.87,174.84,174.89,174.96,175.01,175.07,175.16,175.27,175.39,175.54,175.72,175.91,176.08,176.26,176.47,176.69,176.89,177.13,177.35,177.57,177.80,178.03,178.25,178.52,178.76,178.99,179.29,179.56,179.83,-179.87,-179.59,-179.30,-178.99,-178.68,-178.34,-178.03,-177.67,-177.36,-177.06,-176.72,-176.42,-176.01,-175.64,-175.38,-175.06,-174.80,-174.61,-174.42,-174.29,-174.12,-173.82,-173.69,-173.64,-173.52,-173.41,-173.27,-173.15,-173.02,-172.90,-172.82,-172.73,-172.70,-172.68,-172.72,-172.75,-172.49,-172.57,-172.70,-172.82,-172.90,-173.00,-173.20,-173.36,-173.53,-173.72,-173.92,-174.14,-174.29,-174.49,-174.77,-174.98,-175.28,-175.57,-175.71,-175.85,-176.08,-176.45,-176.79,-177.11,-177.45,-177.78,-178.10,-178.34,-178.65,-178.96,-179.30,-179.65,-179.92,179.79,179.53,179.26,178.98,178.76,178.50,178.26,178.03,177.80,177.63,177.55,177.45,177.31,177.21,177.10,176.96,176.89,176.80,176.74,176.04,176.05,176.06,176.06,175.94,175.90,175.88,175.86,175.82,175.81,175.81,175.82,175.86,175.94,176.02,176.10,176.21,176.32,176.43,176.56,176.69,176.82,176.96,177.11,177.26,177.43,177.58,177.75,177.92,178.11,178.31,178.51,178.72,178.93,179.13,179.34,179.56,179.78,-179.98,-179.74,-179.50,-179.27,-178.98,-178.75,-178.52,-178.29,-178.10,-177.83,-177.56,-177.32,-177.07,-176.83,-176.58,-176.35,-176.19,-175.97,-175.79,-175.66,-175.50,-175.34,-175.22,-175.11,-174.94,-174.81,-174.74,-174.67,-174.63,-174.61,-174.58,-174.52,-174.13,-174.32,-174.34,-174.40,-174.43,-174.49,-174.55,-174.63,-174.67,-174.77,-174.95,-175.10,-175.14,-175.16,-175.28,-175.47,-175.68,-175.88,-175.91,-176.15,-176.26,-176.53,-176.71,-176.91,-177.18,-177.40,-177.54,-177.61,-177.81,-178.08,-178.34,-178.59,-178.88,-179.12,-179.38,-179.59,-179.79,179.98,179.78,179.59,179.42,179.25,179.09,178.89,178.70,178.50,178.32,178.11,177.97,177.88,177.79,177.74,177.78,177.84,177.78,177.70,177.64,177.14,176.82,176.83,176.83,176.86,176.86,176.81,176.80,176.87,176.89,176.93,176.94,176.96,176.99,177.03,177.06,177.11,177.17,177.24,177.33,177.45,177.58,177.72,177.84,177.95,178.10,178.26,178.41,178.54,178.71,178.82,178.97,179.09,179.22,179.38,179.54,179.69,179.87,-179.97,-179.74,-179.54,-179.32,-179.18,-179.00,-178.78,-178.57,-178.35,-178.16,-177.98,-177.81,-177.63,-177.41,-177.28,-177.11,-176.97,-176.79,-176.64,-176.56,-176.43,-176.32,-176.24,-176.13,-176.04,-175.96,-175.92,-175.89,-175.83,-175.81,-175.74,-175.64,-175.47,-175.61,-175.50,-175.54,-175.59,-175.64,-175.69,-175.77,-175.85,-175.91,-175.99,-176.02,-176.05,-176.17,-176.33,-176.45,-176.58,-176.74,-176.88,-177.02,-177.18,-177.31,-177.51,-177.57,-177.75,-177.94,-178.15,-178.33,-178.49,-178.57,-178.56,-178.77,-179.00,-179.23,-179.46,-179.67,-179.84,179.97,179.74,179.65,179.56,179.44,179.36,179.26,179.14,179.03,178.94,178.83,178.70,178.56,178.45,178.37,178.29,178.20,178.19,178.20,178.15,178.15,178.16,178.10,178.04,178.04,178.08,178.07,178.09,178.09,178.09,178.10,178.13,178.16,178.19,178.24,178.30,178.38,178.45,178.54,178.63,178.72,178.79,178.91,178.98,179.08,179.18,179.27,179.40,179.49,179.60,179.75,179.86,179.99,-179.87,-179.72,-179.60,-179.46,-179.29,-179.14,-179.00,-178.88,-178.72,-178.59,-178.45,-178.32,-178.18,-178.04,-177.93,-177.79,-177.67,-177.56,-177.46,-177.35,-177.24,-177.12,-177.08,-177.00,-176.88,-176.83,-176.76,-176.68,-176.62,-176.58,-176.55,-176.52,-176.50,-176.49,-176.50,-176.51,-176.51,-176.53,-176.56,-176.58,-176.61,-176.67,-176.73,-176.80,-176.86,-176.95,-177.04,-177.12,-177.21,-177.32,-177.43,-177.53,-177.64,-177.76,-177.89,-178.00,-178.12,-178.26,-178.40,-178.52,-178.65,-178.83,-178.98,-179.11,-179.24,-179.38,-179.53,-179.66,-179.79,-179.95,179.91,179.81,179.68,179.58,179.48,179.38,179.28,179.20,179.08,179]

L2=[175.02,175.13,175.24,175.34,175.45,175.54,175.63,175.73,175.82,175.91,176.00,176.09,176.17,176.26,176.34,176.42,176.49,176.56,176.62,176.68,176.75,176.81,176.87,176.93,176.99,177.04,177.09,177.15,177.21,177.25,177.30,177.36,177.41,177.47,177.53,177.57,177.63,177.68,177.73,177.78,177.84,177.89,177.93,177.99,178.04,178.09,178.15,178.21,178.27,178.32,178.37,178.42,178.47,178.53,178.58,178.63,178.69,178.74,178.80,178.85,178.91,178.96,179.01,179.05,179.10,179.15,179.20,179.24,179.29,179.36,179.40,179.42,179.47,179.50,179.53,179.58,179.62,179.64,179.68,179.72,179.75,179.78,179.82,179.85,179.87,179.90,179.92,179.95,179.99,-180.00,-179.97,-179.94,-179.92,-179.90,-179.88,-179.86,-179.84,-179.83,-179.82,-179.80,-179.79,-179.78,-179.78,-179.77,-179.77,-179.76,-179.76,-179.75,-179.74,-179.75,-179.74,-179.75,-179.74,-179.74,-179.75,-179.75,-179.75,-179.75,-179.76,-179.77,-179.78,-179.79,-179.79,-179.80,-179.81,-179.83,-179.84,-179.84,-179.85,-179.87,-179.88,-179.88,-179.89,-179.90,-179.91,-179.92,-179.93,-179.94,-179.95,-179.96,-179.96,-179.97,-179.97,-179.97,-179.98,-179.98,-179.98,-179.98,-179.98,-179.98,-179.97,-179.96,-179.95,-179.94,-179.94,-179.92,-179.91,-179.89,-179.89,-179.87,-179.84,-179.84,-179.83,-179.80,-179.77,-179.75,-179.73,-179.71,-179.69,-179.66,-179.64,-179.62,-179.61,-179.58,-179.56,-179.54,-179.52,-179.51,-179.49,-179.48,-179.46,-179.44,-179.43,-179.41,-179.39,-179.37,-179.36,-179.34,-179.32,-179.31,-179.30,-179.29,-179.27,-179.27,-179.27,-179.26,-179.25,-179.24,-179.24,-179.22,-179.22,-179.22,-179.22,-179.21,-179.21,-179.22,-179.23,-179.22,-179.23,-179.24,-179.24,-179.24,-179.25,-179.25,-179.27,-179.27,-179.28,-179.29,-179.29,-179.31,-179.32,-179.33,-179.34,-179.36,-179.37,-179.39,-179.40,-179.42,-179.42,-179.44,-179.45,-179.46,-179.48,-179.49,-179.51,-179.52,-179.53,-179.56,-179.57,-179.58,-179.60,-179.61,-179.62,-179.63,-179.65,-179.66,-179.67,-179.68,-179.68,-179.69,-179.70,-179.70,-179.71,-179.75,-179.76,-179.91,-179.63,-179.68,-179.77,-179.76,-179.68,-179.68,-179.68,-179.67,-179.69,-179.70,-179.69,-179.70,-179.68,-179.65,-179.63,-179.60,-179.58,-179.56,-179.55,-179.52,-179.48,-179.47,-179.45,-179.45,-179.44,-179.44,-179.43,-179.43,-179.41,-179.39,-179.36,-179.35,-179.33,-179.29,-179.28,-179.27,-179.26,-179.25,-179.24,-179.24,-179.23,-179.23,-179.22,-179.22,-179.20,-179.18,-179.16,-179.15,-179.14,-179.13,-179.12,-179.12,-179.12,-179.13,-179.13,-179.14,-179.15,-179.16,-179.16,-179.16,-179.16,-179.16,-179.16,-179.17,-179.17,-179.18,-179.21,-179.23,-179.24,-179.26,-179.27,-179.29,-179.30,-179.32,-179.33,-179.33,-179.34,-179.35,-179.36,-179.37,-179.39,-179.40,-179.42,-179.46,-179.48,-179.51,-179.52,-179.53,-179.55,-179.56,-179.57,-179.58,-179.59,-179.59,-179.60,-179.61,-179.63,-179.65,-179.66,-179.67,-179.68,-179.69,-179.70,-179.70,-179.70,-179.69,-179.68,-179.67,-179.67,-179.67,-179.67,-179.66,-179.67,-179.66,-179.66,-179.64,-179.63,-179.62,-179.59,-179.57,-179.56,-179.54,-179.51,-179.50,-179.48,-179.47,-179.47,-179.46,-179.45,-179.43,-179.41,-179.38,-179.36,-179.35,-179.34,-179.34,-179.33,-179.32,-179.31,-179.29,-179.27,-179.26,-179.23,-179.22,-179.22,-179.22,-179.19,-179.19,-179.19,-179.19,-179.19,-179.18,-179.18,-179.17,-179.16,-179.16,-179.14,-179.14,-179.13,-179.14,-179.13,-179.13,-179.15,-179.15,-179.17,-179.17,-179.19,-179.18,-179.20,-179.20,-179.21,-179.21,-179.22,-179.22,-179.23,-179.24,-179.25,-179.27,-179.29,-179.30,-179.31,-179.34,-179.35,-179.37,-179.37,-179.38,-179.39,-179.40,-179.41,-179.42,-179.44,-179.47,-179.48,-179.50,-179.52,-179.54,-179.55,-179.56,-179.57,-179.58,-179.58,-179.59,-179.60,-179.60,-179.62,-179.62,-179.64,-179.65,-179.66,-179.67,-179.68,-179.68,-179.68,-179.68,-179.68,-179.68,-179.67,-179.66,-179.65,-179.65,-179.65,-179.64,-179.64,-179.64,-179.63,-179.62,-179.61,-179.59,-179.58,-179.56,-179.54,-179.53,-179.51,-179.50,-179.48,-179.47,-179.46,-179.45,-179.44,-179.44,-179.43,-179.41,-179.40,-179.39,-179.36,-179.35,-179.33,-179.32,-179.31,-179.30,-179.29,-179.29,-179.28,-179.26,-179.26,-179.25,-179.23,-179.22,-179.21,-179.20,-179.19,-179.18,-179.17,-179.17,-179.16,-179.16,-179.17,-179.17,-179.18,-179.17,-179.17,-179.17,-179.18,-179.17,-179.17,-179.18,-179.19,-179.19,-179.19,-179.21,-179.22,-179.23,-179.24,-179.26,-179.27,-179.28,-179.29,-179.29,-179.29,-179.30,-179.32,-179.33,-179.34,-179.36,-179.38,-179.39,-179.41,-179.43,-179.44,-179.45,-179.46,-179.49,-179.50,-179.51,-179.52,-179.53,-179.54,-179.56,-179.57,-179.59,-179.60,-179.61,-179.62,-179.63,-179.64,-179.65,-179.66,-179.66,-179.66,-179.68,-179.68,-179.68,-179.69,-179.70,-179.71,-179.66,-179.65,-179.56,-179.54,-179.48,-179.45,-179.39,-179.37,-179.33,-179.31,-179.27,-179.24,-179.21,-179.18,-179.15,-179.13,-179.10,-179.08,-179.06,-179.04,-179.01,-178.99,-178.97,-178.96,-178.95,-178.93,-178.91,-178.91,-178.91,-178.90,-178.89,-178.89,-178.89,-178.88,-178.87,-178.86,-178.87,-178.88,-178.89,-178.89,-178.90,-178.91,-178.93,-178.95,-178.96,-178.99,-179.03,-179.07,-179.13,-179.18,-179.25,-179.29,-179.35,-179.47,-179.51,-179.62,-179.70,-179.82,-179.90,-179.99,179.90,179.89,179.73,179.66,179.56,179.43,179.34,179.26,179.19,179.04,178.93,178.80,178.63,178.46,178.31,178.16,177.98,177.82,177.66,177.46,177.29,177.11,176.93,176.71,176.51,176.34,176.16,175.97,175.77,175.58,175.34,175.13,174.87,174.64,174.40,174.18,173.92,173.68,173.46,173.24,173.03,172.79,172.59,172.46,172.29,172.09,171.90,171.63,171.35,171.15,170.92,170.74,170.55,170.36,170.08,169.82,169.62,169.43,169.24,168.97,168.71,168.49,168.28,168.10,167.96,167.79,167.59,167.12,167.02,166.64,166.30,166.08,165.74,165.48,165.26,164.88,164.59,164.27,163.92,163.66,163.38,163.10,162.82,162.52,162.21,161.97,161.72,161.36,161.11,160.86,160.57,160.34,160.11,159.83,159.58,159.32,159.05,158.84,158.67,158.48,158.26,158.06,157.91,157.72,157.54,157.34,157.13,156.94,156.75,156.63,156.46,156.32,156.18,156.06,155.93,155.78,155.65,155.51,155.37,155.24,155.11,154.98,154.83,154.68,154.51,154.49,154.29,154.02,153.87,153.69,153.45,153.16,152.89,152.75,152.45,152.25,152.05,151.79,151.68,151.54,151.36,151.29,151.11,151.00,150.94,150.84,150.78,150.70,150.57,150.45,150.31,150.15,150.05,149.91,149.82,149.74,149.65,149.59,149.54,149.46,149.38,149.30,149.20,149.10,149.01,148.89,148.79,148.70,148.62,148.51,148.42,148.31,148.20,148.07,147.94,147.82,147.69,147.56,147.41,147.30,147.19,147.06,146.95,146.82,146.70,146.58,146.43,146.25,146.08,145.90,145.73,145.57,145.43,145.30,145.16,145.04,144.90,144.77,144.65,144.52,144.39,144.31,144.25,144.19,144.10,144.08,143.97,143.95,143.93,143.88,143.84,143.80,143.73,143.70,143.66,143.64,143.62,143.61,143.61,143.63,143.64,143.66,143.67,143.68,143.68,143.69,143.69,143.68,143.66,143.66,143.67,143.67,143.66,143.63,143.60,143.55,143.50,143.45,143.39,143.35,143.30,143.21,143.19,143.13,143.08,143.05,143.00,142.95,142.89,142.82,142.76,142.70,142.65,142.61,142.62,142.63,142.66,142.69,142.71,142.73,142.74,142.75,142.76,142.77,142.78,142.80,142.81,142.82,142.84,142.84,142.85,142.84,142.83,142.81,142.79,142.77,142.75,142.73,142.70,142.68,142.64,142.62,142.57,142.49,142.45,142.40,142.37,142.35,142.31,142.29,142.27,142.26,142.26,142.24,142.20,142.18,142.15,142.14,142.13,142.13,142.13,142.14,142.14,142.14,142.15,142.15,142.16,142.17,142.20,142.21,142.24,142.26,142.27,142.28,142.29,142.31,142.35,142.38,142.41,142.43,142.46,142.47,142.47,142.47,142.47,142.46,142.46,142.45,142.45,142.44,142.44,142.41,142.38,142.32,142.28,142.24,142.20,142.18,142.18,142.19,142.19,142.19,142.20,142.19,142.18,142.17,142.16,142.16,142.17,142.17,142.19,142.22,142.25,142.26,142.27,142.29,142.29,142.28,142.28,142.29,142.31,142.33,142.36,142.42,142.47,142.50,142.53,142.54,142.54,142.53,142.52,142.50,142.49,142.49,142.51,142.51,142.52,142.50,142.49,142.47,142.45,142.45,142.46,142.49,142.50,142.52,142.52,142.52,142.52,142.52,142.52,142.51,142.50,142.48,142.46,142.43,142.43,142.41,142.41,142.40,142.40,142.40,142.40,142.41,142.43,142.45,142.46,142.48,142.50,142.52,142.53,142.56,142.57,142.59,142.59,142.58,142.56,142.56,142.57,142.59,142.61,142.64,142.67,142.71,142.72,142.74,142.74,142.74,142.75,142.77,142.81,142.86,142.90,142.96,143.03,143.10,143.19,143.29,143.38,143.47,143.55,143.62,143.67,143.73,143.77,143.84,143.90,143.96,144.00,144.04,144.05,144.04,144.03,144.02,144.00,143.97,143.95,143.92,143.89,143.85,143.79,143.73,143.68,143.63,143.59,143.57,143.57,143.56,143.57,143.55,143.54,143.53,143.52,143.51,143.51,143.53,143.55,143.57,143.60,143.63,143.64,143.64,143.65,143.67,143.69,143.73,143.78,143.82,143.84,143.85,143.83,143.79,143.74,143.69,143.64,143.62,143.60,143.60,143.60,143.59,143.59,143.60,143.61,143.60,143.61,143.61,143.61,143.58,143.57,143.58,143.58,143.61,143.63,143.66,143.66,143.67,143.68,143.69,143.70,143.71,143.72,143.73,143.72,143.73,143.71,143.69,143.68,143.68,143.68,143.68,143.69,143.71,143.72,143.73,143.73,143.73,143.73,143.75,143.78,143.82,143.88,143.94,143.98,144.01,144.04,144.03,144.03,144.02,143.99,143.97,143.94,143.91,143.90,143.90,143.89,143.87,143.87,143.89,143.94,143.97,144.03,144.10,144.18,144.25,144.32,144.35,144.38,144.38,144.38,144.35,144.35,144.34,144.35,144.37,144.39,144.41,144.41,144.42,144.41,144.40,144.41,144.43,144.43,144.43,144.41,144.38,144.33,144.26,144.24,144.21,144.17,144.14,144.20,144.23,144.24,144.26,144.29,144.30,144.30,144.31,144.34,144.37,144.41,144.44,144.48,144.51,144.52,144.52,144.50,144.47,144.43,144.42,144.40,144.40,144.39,144.35,144.29,144.22,144.18,144.13,144.10,144.09,144.09,144.10,144.11,144.12,144.12,144.13,144.13,144.15,144.16,144.19,144.21,144.22,144.23,144.23,144.24,144.26,144.28,144.32,144.35,144.37,144.38,144.36,144.35,144.33,144.31,144.30,144.35,144.37,144.39,144.43,144.44,144.43,144.42,144.40,144.37,144.35,144.32,144.32,144.30,144.30,144.27,144.24,144.20,144.16,144.13,144.10,144.09,144.09,144.11,144.14,144.17,144.19,144.21,144.21,144.20,144.18,144.17,144.16,144.16,144.16,144.15,144.14,144.13,144.11,144.10,144.07,144.06,144.05,144.04,144.05,144.05,144.07,144.08,144.07,144.07,144.05,144.04,144.02,144.02,144.01,144.03,144.05,144.08,144.10,144.11,144.11,144.11,144.10,144.09,144.08,144.08,144.09,144.09,144.11,144.13,144.14,144.17,144.18,144.19,144.19,144.18,144.17,144.16,144.12,144.08,144.05,144.03,144.02,144.02,144.05,144.07,144.08,144.08,144.07,144.03,143.96,143.91,143.87,143.82,143.81,143.82,143.86,143.87,143.87,143.89,143.91,143.95,144.00,144.06,144.12,144.19,144.24,144.29,144.35,144.39,144.47,144.55,144.65,144.77,144.92,145.24,145.68,146.29,146.98,147.85,148.80,149.75,150.74,151.75,152.73,153.89,155.23,156.76,158.55,160.18,161.31,162.80,164.41,165.74,167.28,168.86,170.32,171.72,173.17,174.82,176.34,177.80,179.21,-179.34,-177.50,-175.59,-174.00,-172.32,-170.75,-169.21,-167.50,-166.04,-164.39,-163.01,-161.63,-160.06,-158.77,-157.55,-156.45,-155.49,-154.18,-153.49,-152.84,-152.23,-151.61,-151.08,-150.35,-149.98,-149.58,-149.34,-149.21,-149.08,-149.21,-149.53,-147.83,-148.66,-149.05,-148.73,-149.25,-149.92,-150.40,-151.16,-151.71,-152.40,-153.27,-154.09,-155.02,-155.95,-157.16,-158.33,-159.53,-160.95,-162.38,-163.85,-165.28,-166.70,-168.32,-169.83,-171.03,-172.51,-174.23,-176.12,-177.40,-178.83,179.62,178.31,176.98,175.48,174.02,172.76,171.57,170.35,169.16,167.81,166.74,165.68,164.66,163.62,162.26,161.32,160.47,159.62,158.78,157.52,156.68,156.20,155.71,154.99,154.29,153.69,152.99,152.54,152.67,152.46,152.25,152.08,151.78,151.77,151.76,151.77,151.91,152.34,152.80,153.44,154.07,154.02,153.89,154.48,155.33,155.76,156.58,157.24,157.93,158.75,159.57,160.45,161.36,162.27,163.17,164.11,165.42,166.64,167.74,168.86,169.96,171.29,172.50,173.62,174.78,176.02,177.21,178.61,179.89,-178.89,-177.39,-175.96,-174.67,-173.10,-171.69,-170.31,-168.77,-167.42,-165.89,-164.59,-163.30,-162.09,-160.99,-159.73,-158.69,-157.51,-156.06,-155.04,-153.85,-152.90,-152.19,-151.49,-150.66,-149.94,-149.42,-149.11,-148.84,-148.71,-148.47,-148.39,-148.34,-148.41,-148.51,-148.65,-149.15,-149.73,-150.33,-148.97,-150.34,-151.31,-151.53,-152.37,-153.09,-153.95,-155.02,-155.96,-156.86,-158.22,-159.44,-160.30,-161.51,-162.76,-163.84,-165.01,-166.52,-167.90,-169.29,-170.72,-172.12,-173.73,-175.15,-176.54,-178.13,-179.46,178.91,177.67,176.46,175.30,174.18,173.01,171.67,170.37,169.32,168.29,167.30,166.38,165.31,164.39,163.49,162.70,161.76,161.03,159.29,158.09,157.83,157.58,157.12,156.69,155.92,155.58,155.09,154.85,155.07,154.78,154.69,154.60,154.59,154.20,154.15,154.35,154.76,155.11,154.48,154.68,155.52,156.12,156.38,157.12,157.81,158.27,159.03,159.73,160.39,161.17,161.96,162.78,163.65,164.69,165.62,166.78,167.74,168.66,169.65,170.81,171.92,173.03,174.28,175.32,176.41,177.67,178.83,179.98,-178.90,-177.63,-176.15,-174.66,-173.36,-172.10,-170.85,-169.43,-168.22,-167.06,-165.95,-164.65,-163.34,-162.30,-161.34,-160.40,-159.15,-158.16,-157.10,-156.15,-155.43,-154.80,-154.21,-153.56,-153.16,-152.81,-152.48,-152.13,-151.77,-151.75,-151.71,-151.78,-151.87,-152.13,-152.55,-152.97,-152.73,-153.78,-154.78,-155.51,-155.96,-156.56,-157.25,-158.01,-159.01,-158.98,-160.05,-161.02,-161.78,-162.93,-164.07,-165.20,-166.28,-167.30,-168.57,-169.77,-170.99,-172.22,-173.44,-174.93,-176.16,-177.49,-178.80,179.93,178.67,177.61,176.55,175.33,174.28,173.27,172.10,171.12,170.17,169.29,168.40,167.53,166.56,165.57,164.81,164.02,163.34,162.52,161.08,159.82,159.68,159.19,158.43,157.79,157.35,157.02,157.29,157.29,157.10,156.85,156.01,155.42,155.22,155.52,155.85,156.18,156.55,156.63,156.29,156.97,157.69,158.38,158.52,159.17,159.76,160.16,160.81,161.41,162.06,162.76,163.47,164.24,165.02,165.90,166.76,167.78,168.77,169.63,170.72,171.70,172.66,173.61,174.61,175.58,176.84,177.81,178.78,179.93,-179.05,-177.86,-176.51,-175.34,-174.25,-173.05,-171.89,-170.62,-169.31,-168.19,-167.15,-166.15,-164.99,-164.05,-163.22,-162.36,-161.20,-160.16,-159.42,-158.69,-158.03,-157.37,-156.87,-156.25,-155.73,-155.41,-155.14,-154.93,-154.69,-154.61,-154.61,-154.70,-154.91,-155.23,-155.58,-156.11,-156.35,-157.14,-157.62,-157.89,-158.47,-158.94,-159.57,-160.15,-160.88,-161.42,-162.24,-162.93,-163.92,-164.85,-165.92,-166.95,-167.88,-169.02,-169.98,-171.07,-172.22,-173.38,-174.62,-175.73,-176.66,-177.91,-179.12,179.62,178.38,177.56,176.59,175.64,174.64,173.61,172.72,171.78,170.89,170.01,169.22,168.27,167.40,166.70,166.01,165.32,164.73,163.24,162.01,161.20,160.83,160.31,160.00,159.56,159.15,158.89,158.70,158.40,158.57,158.39,158.23,158.10,158.33,158.53,158.81,159.05,158.10,158.52,159.08,159.72,160.33,160.17,160.92,161.70,162.04,162.55,163.10,163.64,164.20,164.82,165.49,166.21,166.96,167.73,168.49,169.50,170.40,171.19,172.02,172.81,173.61,174.52,175.45,176.31,177.47,178.35,179.30,-179.78,-178.73,-177.72,-176.48,-175.48,-174.26,-173.20,-172.21,-171.08,-170.06,-169.07,-168.17,-167.30,-166.02,-164.93,-164.08,-163.39,-162.65,-161.77,-161.07,-160.54,-159.88,-159.47,-159.05,-158.70,-158.44,-157.97,-157.87,-157.73,-157.57,-156.36,-156.18,-156.35,-156.30,-156.21,-156.38,-156.59,-156.77,-157.13,-157.49,-157.95,-158.44,-158.98,-159.55,-160.19,-160.89,-161.56,-162.29,-163.08,-163.97,-164.83,-165.69,-166.60,-167.79,-168.88,-169.90,-170.82,-171.74,-172.82,-174.01,-175.05,-176.18,-177.20,-178.26,-179.41,179.63,178.72,177.84,176.98,176.15,175.05,174.25,173.51,172.72,172.01,171.33,170.52,169.86,168.94,167.90,167.23,166.59,166.03,165.53,165.52,165.21,164.80,164.29,163.83,163.34,163.34,163.31,163.30,162.70,162.30,162.05,162.00,162.10,162.30,161.75,161.45,161.95,162.39,162.50,162.96,163.38,163.64,164.05,164.48,164.88,165.35,165.85,166.37,166.92,167.51,168.15,168.80,169.49,170.21,170.99,171.70,172.40,173.20,174.01,174.77,175.60,176.41,177.19,178.10,178.96,179.77,-179.45,-178.52,-177.44,-176.40,-175.45,-174.51,-173.62,-172.72,-171.70,-170.85,-169.75,-168.85,-168.07,-167.19,-166.49,-165.78,-165.18,-164.57,-163.76,-163.25,-162.80,-162.33,-161.95,-161.61,-161.37,-161.27,-161.05,-160.57,-160.68,-161.00,-160.78,-160.54,-160.63,-160.64,-160.58,-160.78,-160.93,-161.14,-161.39,-161.62,-161.98,-162.44,-162.96,-163.44,-164.06,-164.62,-165.24,-165.91,-166.61,-167.36,-168.12,-168.88,-169.58,-170.33,-171.32,-172.20,-173.23,-174.16,-174.95,-175.95,-176.90,-177.72,-178.65,-179.52,179.52,178.64,177.88,176.99,176.30,175.55,174.68,173.95,173.30,172.68,172.01,171.41,170.56,169.99,169.48,168.95,168.13,167.68,167.14,166.77,166.40,165.89,165.54,165.20,164.83,164.56,164.35,164.18,164.38,164.27,164.01,163.77,163.89,163.95,164.14,164.36,164.54,163.42,164.02,164.34,164.73,165.18,165.77,165.29,166.07,166.90,167.08,167.42,167.95,168.41,168.85,169.40,169.93,170.53,171.12,171.67,172.33,173.04,173.77,174.56,175.25,175.95,176.66,177.37,178.11,178.91,179.65,-179.56,-178.69,-177.78,-176.85,-176.05,-175.25,-174.39,-173.47,-172.49,-171.74,-170.98,-170.27,-169.60,-168.96,-168.24,-167.61,-166.90,-166.63,-166.13,-165.63,-165.27,-164.95,-164.59,-164.27,-163.70,-163.92,-164.02,-164.00,-164.03,-163.53,-163.48,-163.46,-163.31,-163.34,-163.37,-163.46,-163.59,-163.74,-163.96,-164.22,-164.50,-164.87,-165.27,-165.71,-166.19,-166.70,-167.25,-167.81,-168.45,-169.13,-169.79,-170.46,-171.15,-171.78,-172.47,-173.39,-174.40,-175.11,-175.77,-176.59,-177.45,-178.19,-178.99,-179.73,179.40,178.74,178.13,177.56,176.97,176.33,175.72,175.01,174.43,173.77,173.22,172.67,172.15,171.54,171.09,170.69,169.78,169.02,168.45,168.00,167.64,167.34,167.18,167.10,166.78,166.55,166.35,166.12,165.88,165.57,165.34,165.29,165.29,165.63,165.78,166.05,166.27,166.52,166.58,166.50,166.95,167.54,167.91,168.28,168.03,168.46,169.06,169.62,170.00,170.46,170.92,171.45,171.96,172.42,173.04,173.53,174.08,174.66,175.24,175.84,176.53,177.13,177.74,178.38,179.08,179.77,-179.68,-178.93,-178.20,-177.45,-176.69,-175.89,-175.00,-174.26,-173.60,-172.94,-172.21,-171.59,-170.96,-170.40,-169.78,-169.21,-168.68,-168.12,-167.70,-167.29,-166.81,-166.51,-165.08,-164.35,-164.27,-164.09,-163.99,-163.91,-163.63,-163.44,-163.30,-163.28,-163.32,-163.38,-163.48,-163.57,-163.73,-163.91,-164.14,-164.42,-164.71,-165.06,-165.41,-165.80,-166.21,-166.66,-167.21,-167.73,-168.25,-168.75,-169.33,-169.96,-170.57,-171.18,-171.90,-172.67,-173.44,-174.07,-174.75,-175.45,-176.16,-176.94,-177.72,-178.41,-179.09,-179.75,179.48,178.91,178.35,177.79,177.11,176.51,175.76,175.11,174.55,174.06,173.57,173.13,172.56,172.11,171.59,171.19,170.82,170.62,170.29,170.08,169.83,169.64,169.50,169.00,168.53,168.64,168.67,168.80,168.52,168.19,168.35,168.42,168.30,168.47,168.60,168.63,168.81,168.97,169.14,169.36,169.60,169.83,170.11,170.39,170.70,171.04,171.37,171.78,172.14,172.55,172.95,173.41,173.87,174.34,174.77,175.30,175.84,176.35,176.88,177.51,178.01,178.54,179.06,179.61,-179.82,-179.10,-178.48,-177.81,-177.14,-176.52,-175.75,-175.03,-174.38,-173.80,-173.25,-172.64,-171.99,-171.52,-171.07,-170.60,-170.11,-169.77,-169.41,-169.00,-168.64,-168.18,-167.92,-167.68,-167.49,-166.18,-165.95,-165.56,-165.37,-165.33,-165.30,-165.24,-165.16,-165.24,-165.36,-165.45,-165.53,-165.66,-165.83,-166.05,-166.32,-166.50,-166.88,-167.20,-167.58,-167.96,-168.38,-168.85,-169.32,-169.71,-170.15,-170.78,-171.46,-171.93,-172.54,-173.03,-173.70,-174.32,-174.95,-175.55,-176.20,-176.83,-177.52,-178.09,-178.66,-179.24,-179.86,179.45,178.86,178.38,177.90,177.46,177.06,176.55,176.11,175.61,175.12,174.68,174.29,173.80,173.42,173.09,172.77,172.45,172.15,171.91,171.70,171.45,171.38,171.31,171.24,171.14,171.10,170.58,170.58,170.70,170.75,170.88,170.60,170.52,170.68,170.79,170.86,171.02,171.18,171.33,171.51,171.73,171.96,172.19,172.44,172.71,173.01,173.29,173.65,173.97,174.35,174.72,175.10,175.50,175.95,176.27,176.71,177.25,177.66,178.04,178.54,179.01,179.47,179.92,-179.62,-179.08,-178.39,-177.82,-177.30,-176.78,-176.19,-175.54,-175.08,-174.61,-174.09,-173.68,-173.18,-172.79,-172.44,-172.08,-171.87,-171.50,-171.12,-170.77,-170.46,-170.27,-169.99,-169.68,-169.23,-169.35,-169.42,-169.39,-169.38,-169.37,-169.14,-169.26,-169.27,-169.23,-169.19,-169.21,-169.39,-169.51,-169.64,-169.81,-170.00,-170.19,-170.40,-170.70,-171.01,-171.25,-171.58,-172.05,-172.30,-172.72,-173.15,-173.54,-173.97,-174.39,-174.84,-175.32,-175.80,-176.28,-176.83,-177.26,-177.74,-178.24,-178.71,-179.28,-179.75,179.79,179.35,178.92,178.51,177.93,177.46,177.02,176.61,176.23,175.83,175.36,175.10,174.87,174.62,174.41,174.12,173.94,173.74,173.56,173.32,172.45,171.90,171.86,171.76,171.67,171.51,171.43,171.35,171.28,171.23,171.23,171.22,171.22,171.22,171.29,171.37,171.47,171.56,171.69,171.86,172.06,172.28,172.54,172.71,172.86,173.19,173.39,173.70,173.97,174.24,174.57,174.87,175.19,175.52,175.84,176.19,176.61,177.04,177.42,177.83,178.21,178.57,179.02,179.42,179.76,-179.83,-179.39,-178.90,-178.37,-177.90,-177.48,-177.07,-176.66,-176.10,-175.69,-175.28,-174.85,-174.37,-173.83,-173.47,-173.16,-172.82,-172.52,-172.20,-171.99,-171.75,-171.54,-171.47,-171.29,-171.09,-170.96,-170.83,-170.77,-170.69,-170.29,-170.47,-170.53,-170.59,-170.67,-170.79,-170.88,-170.38,-170.62,-170.86,-170.81,-170.96,-171.15,-171.37,-171.68,-171.98,-172.26,-172.56,-172.86,-173.19,-173.46,-173.76,-174.19,-174.57,-174.93,-175.36,-175.78,-176.20,-176.59,-176.99,-177.49,-177.86,-178.25,-178.64,-179.05,-179.57,-179.97,179.63,179.27,178.92,178.61,178.18,177.86,177.55,177.05,176.76,176.49,176.17,175.91,175.65,175.40,175.15,174.92,174.62,174.44,174.25,174.20,174.15,174.11,174.13,174.04,174.01,173.93,173.67,173.60,173.72,173.89,174.11,174.21,174.32,174.38,174.13,174.28,174.47,174.64,174.76,174.77,174.99,175.20,175.41,175.57,175.74,175.92,176.11,176.31,176.52,176.74,176.97,177.17,177.46,177.77,178.10,178.30,178.56,178.94,179.24,179.52,179.83,-179.85,-179.41,-179.07,-178.72,-178.35,-177.97,-177.56,-177.21,-176.81,-176.40,-176.07,-175.75,-175.23,-174.85,-174.60,-174.36,-174.07,-173.73,-173.53,-173.35,-173.13,-172.94,-172.73,-172.60,-172.43,-172.27,-172.20,-172.13,-172.09,-172.08,-172.07,-171.49,-171.60,-171.61,-171.59,-171.66,-171.78,-171.37,-171.55,-171.79,-171.86,-171.94,-172.09,-172.26,-172.57,-172.72,-172.94,-173.18,-173.44,-173.71,-173.92,-174.23,-174.54,-174.85,-175.18,-175.51,-175.80,-176.18,-176.55,-176.80,-177.09,-177.40,-177.75,-178.18,-178.56,-178.96,-179.31,-179.66,179.95,179.69,179.43,179.19,178.92,178.61,178.31,178.00,177.75,177.48,177.24,176.98,176.76,176.63,176.50,176.44,176.35,176.22,176.10,176.00,175.90,175.30,175.36,175.52,175.62,175.62,175.49,175.51,175.52,175.50,175.48,175.50,175.56,175.58,175.65,175.71,175.76,175.82,175.90,175.96,176.03,176.15,176.30,176.44,176.59,176.79,177.04,177.25,177.43,177.64,177.84,178.05,178.29,178.51,178.74,178.96,179.17,179.44,179.67,179.91,-179.77,-179.49,-179.22,-178.96,-178.64,-178.32,-178.03,-177.77,-177.46,-177.11,-176.79,-176.45,-176.23,-176.02,-175.79,-175.60,-175.36,-175.26,-175.07,-174.87,-174.68,-174.51,-174.35,-174.21,-173.96,-173.80,-173.69,-173.61,-173.53,-173.32,-173.18,-173.16,-173.13,-173.10,-173.12,-173.14,-173.16,-173.21,-173.27,-173.39,-173.45,-173.57,-173.76,-173.95,-174.15,-174.09,-174.36,-174.67,-174.83,-175.00,-175.25,-175.45,-175.65,-175.90,-176.15,-176.42,-176.67,-176.94,-177.21,-177.44,-177.70,-177.93,-178.18,-178.45,-178.75,-179.06,-179.32,-179.61,-179.88,179.76,179.53,179.33,179.12,178.86,178.64,178.37,178.12,177.89,177.72,177.63,177.62,177.58,177.53,177.43,177.29,177.19,177.02,176.58,176.55,176.67,176.73,176.71,176.72,176.66,176.56,176.59,176.60,176.57,176.56,176.53,176.44,176.47,176.64,176.82,176.73,176.88,176.88,176.98,177.06,177.14,177.30,177.37,177.54,177.67,177.83,177.98,178.15,178.31,178.49,178.66,178.82,178.99,179.15,179.34,179.52,179.70,179.89,-179.92,-179.73,-179.45,-179.21,-179.00,-178.80,-178.58,-178.31,-178.06,-177.85,-177.62,-177.38,-177.18,-176.91,-176.73,-176.56,-176.37,-176.17,-176.00,-175.82,-175.73,-175.61,-175.49,-175.36,-175.23,-175.13,-175.07,-175.00,-174.92,-174.81,-174.70,-174.66,-174.26,-174.33,-174.43,-174.37,-174.41,-174.46,-174.48,-174.54,-174.64,-174.71,-174.82,-174.94,-175.07,-175.21,-175.34,-175.25,-175.38,-175.57,-175.71,-175.88,-176.09,-176.25,-176.42,-176.64,-176.84,-177.00,-177.20,-177.39,-177.54,-177.70,-177.92,-178.15,-178.44,-178.68,-178.95,-179.15,-179.34,-179.60,-179.82,179.96,179.72,179.56,179.40,179.30,179.16,179.06,179.00,178.93,178.84,178.73,178.61,178.52,178.38,178.05,178.02,178.01,178.01,177.92,177.85,177.79,177.72,177.66,177.62,177.59,177.55,177.55,177.53,177.56,177.59,177.64,177.69,177.74,177.80,177.87,177.95,178.02,178.09,178.19,178.28,178.37,178.46,178.55,178.66,178.78,178.88,179.01,179.16,179.28,179.42,179.58,179.73,179.87,-179.99,-179.84,-179.67,-179.46,-179.29,-179.14,-178.98,-178.82,-178.63,-178.47,-178.31,-178.13,-177.96,-177.81,-177.68,-177.51,-177.36,-177.25,-177.09,-176.91,-176.74,-176.65,-176.55,-176.42,-176.31,-176.27,-176.19,-176.09,-176.01,-175.97,-175.95,-175.93,-175.92,-175.91,-175.90,-175.90,-175.93,-175.96,-175.52,-175.73,-175.88,-175.95,-176.01,-176.09,-176.16,-176.25,-176.30,-176.41,-176.50,-176.52,-176.60,-176.76,-176.92,-177.09,-177.26,-177.40,-177.50,-177.62,-177.71,-177.94,-178.03,-178.24,-178.41,-178.57,-178.72,-178.84,-178.94,-179.01,-179.14,-179.34,-179.51,-179.68,-179.82,-179.96,179.87,179.59,179.57,179.47,179.33,179.25,179.11,179.00,178.89,178.81,178.70,178.61,178.51,178.45,178.39,178.34,178.29,178.27,178.27,178.24,178.23,178.23,178.23,178.24,178.25,178.26,178.29,178.30,178.33,178.37,178.42,178.47,178.53,178.59,178.67,178.76,178.84,178.93,178.98,179.08,179.16,179.27,179.36,179.45,179.56,179.65,179.76,179.89,180.00,-179.89,-179.76,-179.63,-179.50,-179.34,-179.21,-179.06,-178.94,-178.81,-178.69,-178.56,-178.44,-178.32,-178.21,-178.07,-177.96,-177.84,-177.74,-177.65,-177.55,-177.45,-177.36,-177.27,-177.20,-177.12,-177.06,-176.99,-176.94,-176.90,-176.87,-176.83,-176.81,-176.81,-176.79,-176.78,-176.78,-176.79,-176.81,-176.84,-176.88,-176.92,-176.97,-177.02,-177.09,-177.15,-177.22,-177.30,-177.39,-177.47,-177.55,-177.65,-177.75,-177.85,-177.96,-178.08,-178.21,-178.33,-178.44,-178.56,-178.68,-178.81,-178.93,-179.06,-179.18,-179.31,-179.44,-179.57,-179.69,-179.82,-179.94,179.89,179.80,179.69,179.59,179.49,179.40,179.31,179.22,179.16,179.07,179.02,178.97,178.90,178.86,178.81,178.77,178.73,178.70,178.65,178.63,178.61,178.60,178.60,178.60,178.62,178.64,178.66,178.68,178.73,178.78,178.83,178.88,178.94,179.00,179.06,179.13,179.19,179.27,179.33,179.41,179.49,179.57,179.65,179.75,179.84,179.93,-179.97,-179.85,-179.74,-179.64,-179.52,-179.40,-179.28,-179.16,-179.02,-178.92,-178.82,-178.69,-178.58,-178.48,-178.37,-178.27,-178.16,-178.06,-177.97,-177.88,-177.80,-177.72,-177.62,-177.55,-177.47,-177.41,-177.35,-177.29,-177.24,-177.19,-177.16,-177.12,-177.08,-177.06,-177.06,-177.05,-177.04,-177.04,-177.05,-177.07,-177.09,-177.12,-177.16,-177.21,-177.25,-177.31,-177.37,-177.43,-177.50,-177.57,-177.65,-177.73,-177.82,-177.91,-178.00,-178.09,-178.20,-178.30,-178.41,-178.51,-178.63,-178.73,-178.85,-178.98,-179.11,-179.23,-179.34,-179.45,-179.57,-179.69,-179.80,-179.90,179.98,179.87,179.80,179.70,179.62,179.54,179.46,179.36,179.30,179.22,179.17,179.12,179.07,179.02,178.97,178.95,178.92,178.90,178.87,178.84,178.83,178.82,178.82,178.83,178.83,178.84,178.85,178.86,178.89,178.92,178.96,179.02,179.07,179.12,179.18,179.23,179.30,179.37,179.44,179.51,179.59,179.66,179.75,179.83,179.92,-179.99,-179.89,-179.79,-179.67,-179.56,-179.46,-179.36,-179.25,-179.12,-179.01,-178.91,-178.80,-178.71,-178.60,-178.51,-178.41,-178.30,-178.20,-178.11,-178.02,-177.93,-177.85,-177.78,-177.70,-177.62,-177.55,-177.50,-177.46,-177.39,-177.35,-177.31,-177.28,-177.25,-177.22,-177.21,-177.20,-177.19,-177.19,-177.20,-177.20,-177.21,-177.24,-177.28,-177.32,-177.35,-177.40,-177.46,-177.51,-177.58,-177.64,-177.70,-177.78,-177.86,-177.94,-178.04,-178.13,-178.23,-178.32,-178.41,-178.52,-178.62,-178.73,-178.84,-178.94,-179.07,-179.17,-179.27,-179.37,-179.48,-179.60,-179.70,-179.80,-179.91,179.98,179.90,179.79,179.71,179.63,179.55,179.48,179.40,179.32,179.25,179.21,179.15,179.11,179.06,179.02,178.98,178.95,178.94,178.90,178.87,178.87,178.87,178.87,178.87,178.87,178.88,178.89,178.92,178.95,179.00,179.04,179.07,179.12,179.17,179.23,179.29,179.35,179.41,179.47,179.54,179.62,179.69,179.77,179.86,179.94,-179.97,-179.87,-179.78,-179.67,-179.58,-179.47,-179.37,-179.27,-179.13,-179.03,-178.92,-178.82,-178.73,-178.62,-178.53,-178.43,-178.34,-178.24,-178.15,-178.06,-177.99,-177.90,-177.83,-177.76,-177.68,-177.62,-177.56,-177.52,-177.47,-177.42,-177.39,-177.36,-177.33,-177.31,-177.29,-177.29,-177.28,-177.28,-177.28,-177.30,-177.32,-177.34,-177.37,-177.41,-177.45,-177.49,-177.54,-177.59,-177.64,-177.70,-177.77,-177.84,-177.92,-177.99,-178.08,-178.16,-178.26,-178.36,-178.45,-178.55,-178.65,-178.75,-178.85,-178.95,-179.06,-179.17,-179.28,-179.39,-179.48,-179.58,-179.70,-179.80,-179.91,179.99,179.90,179.81,179.73,179.65,179.58,179.51,179.43,179.35,179.29,179.24,179.19,179.16,179.10,179.06,179.02,179.00,178.98,178.96,178.95,178.93,178.92,178.92,178.92,178.93,178.95,178.96,178.97,179.00,179.03,179.08,179.13,179.18,179.23,179.29,179.35,179.41,179.46,179.55,179.60,179.66,179.73,179.80

]

l3=[-178.07,-178.09,-178.11,-178.12,-178.14,-178.16,-178.18,-178.21,-178.23,-178.25,-178.27,-178.29,-178.30,-178.31,-178.32,-178.33,-178.34,-178.35,-178.37,-178.38,-178.39,-178.40,-178.42,-178.44,-178.45,-178.47,-178.49,-178.50,-178.49,-178.50,-178.51,-178.52,-178.52,-178.53,-178.54,-178.56,-178.57,-178.58,-178.59,-178.60,-178.61,-178.62,-178.62,-178.63,-178.64,-178.64,-178.64,-178.65,-178.66,-178.67,-178.69,-178.69,-178.69,-178.71,-178.71,-178.71,-178.71,-178.72,-178.72,-178.72,-178.73,-178.74,-178.74,-178.74,-178.74,-178.75,-178.75,-178.76,-178.76,-178.77,-178.78,-178.77,-178.78,-178.79,-178.80,-178.80,-178.79,-178.79,-178.81,-178.82,-178.82,-178.83,-178.85,-178.85,-178.85,-178.86,-178.86,-178.86,-178.86,-178.86,-178.87,-178.87,-178.87,-178.87,-178.88,-178.88,-178.88,-178.89,-178.89,-178.89,-178.90,-178.90,-178.91,-178.91,-178.92,-178.92,-178.92,-178.92,-178.93,-178.94,-178.93,-178.94,-178.94,-178.94,-178.95,-178.95,-178.95,-178.95,-178.95,-178.94,-178.94,-178.94,-178.95,-178.95,-178.95,-178.96,-178.96,-178.96,-178.96,-178.97,-178.97,-178.97,-178.98,-178.98,-178.98,-178.97,-178.98,-178.98,-178.99,-178.99,-178.98,-178.98,-178.98,-178.99,-178.99,-178.99,-178.99,-178.99,-179.00,-178.99,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-179.00,-178.99,-178.99,-178.98,-178.98,-178.99,-178.99,-179.00,-179.00,-179.00,-178.99,-179.00,-178.99,-179.00,-179.00,-178.99,-178.99,-178.98,-178.97,-178.98,-178.99,-178.99,-179.00,-179.00,-179.00,-178.97,-179.16,-179.20,-179.29,-179.45,-179.82,179.79,179.52,179.07,178.31,177.86,177.23,176.58,175.81,175.15,174.49,173.86,173.26,172.63,172.02,171.46,170.77,170.14,169.48,168.77,168.27,167.65,166.92,166.35,165.68,165.01,164.27,163.58,162.82,162.13,161.45,160.79,160.10,159.41,158.58,157.80,157.13,156.46,155.76,154.98,154.31,153.70,153.13,152.54,151.83,151.19,150.69,150.11,149.56,149.11,148.69,148.15,147.73,147.22,146.67,146.27,146.03,145.75,145.43,145.11,144.81,144.57,144.31,144.06,143.92,143.85,143.82,143.79,143.80,143.72,143.74,143.82,143.83,143.94,143.97,144.05,144.13,144.19,144.26,144.33,144.40,144.48,144.53,144.58,144.60,144.62,144.62,144.58,144.52,144.47,144.40,144.33,144.26,144.18,144.10,144.00,143.91,143.83,143.74,143.65,143.56,143.46,143.35,143.24,143.12,143.01,142.90,142.80,142.70,142.61,142.52,142.43,142.36,142.28,142.21,142.13,142.08,142.03,141.99,141.96,141.95,141.95,141.96,141.95,141.93,141.91,141.88,141.87,141.85,141.84,141.86,141.88,141.92,141.97,142.01,142.04,142.05,142.03,142.01,141.96,141.92,141.87,141.84,141.80,141.78,141.74,141.69,141.63,141.55,141.47,141.39,141.31,141.24,141.18,141.12,141.07,141.03,140.98,140.92,140.88,140.84,140.79,140.74,140.71,140.72,140.73,140.74,140.74,140.75,140.75,140.75,140.75,140.75,140.77,140.78,140.79,140.78,140.78,140.78,140.77,140.74,140.73,140.71,140.71,140.70,140.70,140.70,140.69,140.68,140.69,140.68,140.68,140.68,140.66,140.66,140.63,140.59,140.53,140.47,140.39,140.32,140.26,140.20,140.16,140.11,140.09,140.07,140.04,140.00,139.96,139.92,139.89,139.88,139.87,139.90,139.91,139.93,139.96,139.99,140.01,140.01,140.01,140.02,140.00,140.01,140.00,140.02,140.04,140.05,140.08,140.08,140.09,140.07,140.04,139.99,139.96,139.92,139.89,139.87,139.84,139.84,139.81,139.80,139.78,139.76,139.75,139.76,139.75,139.76,139.78,139.81,139.82,139.85,139.85,139.85,139.84,139.82,139.81,139.80,139.79,139.79,139.80,139.79,139.78,139.77,139.75,139.72,139.71,139.69,139.69,139.71,139.73,139.75,139.76,139.77,139.78,139.77,139.75,139.72,139.69,139.66,139.64,139.61,139.59,139.58,139.59,139.58,139.59,139.58,139.58,139.58,139.57,139.56,139.55,139.54,139.53,139.50,139.47,139.45,139.41,139.37,139.34,139.31,139.30,139.29,139.31,139.31,139.31,139.30,139.28,139.24,139.21,139.17,139.14,139.12,139.13,139.15,139.18,139.21,139.22,139.24,139.24,139.23,139.23,139.24,139.26,139.29,139.34,139.37,139.40,139.39,139.39,139.39,139.39,139.37,139.35,139.34,139.34,139.34,139.34,139.37,139.41,139.47,139.55,139.69,139.87,140.14,140.47,141.00,141.61,142.44,143.25,144.32,145.35,146.58,147.86,149.30,150.67,152.16,153.72,155.13,156.73,158.41,160.01,161.84,163.48,165.05,166.63,168.52,170.19,171.75,173.37,174.91,176.95,178.55,-179.74,-177.87,-176.08,-174.28,-172.19,-170.37,-168.58,-166.67,-165.02,-163.16,-161.60,-160.12,-158.67,-157.16,-155.45,-153.78,-152.62,-151.42,-150.39,-149.27,-148.44,-147.66,-146.95,-146.18,-145.58,-145.45,-145.28,-145.04,-144.90,-144.70,-145.18,-145.59,-144.39,-145.05,-145.72,-145.73,-146.27,-147.01,-147.72,-148.50,-149.26,-150.03,-151.00,-151.97,-152.98,-154.22,-155.44,-156.81,-158.22,-159.56,-161.26,-162.80,-164.36,-165.92,-167.48,-169.58,-171.24,-172.78,-174.36,-176.06,-178.11,-179.90,178.52,176.89,175.39,173.90,172.34,170.87,169.59,168.21,166.81,165.49,163.74,162.50,161.33,160.21,159.17,157.89,156.99,155.13,153.81,152.86,152.09,151.24,150.60,149.67,149.06,148.66,148.18,147.61,147.10,146.83,146.58,146.45,146.43,146.33,146.39,146.52,146.74,146.94,147.48,147.91,148.28,149.07,149.89,150.16,150.41,151.33,152.45,153.59,153.84,154.85,156.08,156.88,157.97,159.12,160.12,161.27,162.79,164.01,165.18,166.37,167.73,169.14,170.61,171.86,173.12,174.63,176.04,177.32,178.79,-179.92,-178.31,-176.59,-175.03,-173.04,-171.38,-169.82,-168.34,-166.72,-165.07,-163.40,-162.00,-160.40,-159.08,-157.87,-156.43,-155.24,-153.78,-152.23,-151.08,-149.82,-148.86,-148.05,-147.32,-146.64,-145.91,-145.39,-145.00,-144.58,-144.34,-144.10,-144.19,-144.34,-144.54,-144.84,-145.08,-145.45,-146.18,-147.12,-146.96,-147.98,-149.01,-149.71,-150.42,-151.49,-152.16,-153.32,-154.27,-155.69,-156.93,-158.17,-159.13,-160.59,-161.99,-163.19,-164.66,-166.27,-167.67,-169.29,-170.84,-172.58,-174.33,-175.86,-177.55,-179.12,179.25,177.63,176.22,174.98,173.42,172.07,170.73,169.22,167.99,166.82,165.65,164.49,163.39,161.95,160.98,160.04,158.96,157.73,156.71,155.69,155.05,154.79,154.16,153.48,152.73,152.16,151.82,151.54,150.89,150.29,149.68,149.73,149.97,150.15,150.06,149.96,150.12,150.50,150.83,151.17,151.58,152.11,152.60,153.19,153.84,154.49,155.21,155.94,156.77,157.62,158.55,159.63,160.65,161.42,162.58,163.62,164.91,166.04,167.23,168.46,169.76,170.96,172.20,173.32,174.63,175.83,177.26,178.49,179.83,-178.91,-177.40,-175.75,-174.35,-172.91,-171.52,-170.16,-168.33,-166.81,-165.42,-164.10,-162.74,-161.23,-160.09,-158.36,-156.99,-155.89,-154.96,-153.68,-152.73,-151.94,-151.20,-150.58,-149.63,-149.07,-148.61,-148.22,-147.91,-147.60,-147.45,-147.30,-147.21,-147.36,-147.48,-147.70,-148.40,-149.09,-148.58,-149.27,-149.98,-150.13,-151.06,-151.63,-152.47,-153.32,-154.25,-155.26,-156.33,-157.45,-158.57,-159.75,-161.37,-162.58,-163.73,-165.32,-166.66,-168.11,-169.53,-170.91,-172.51,-173.90,-175.33,-176.79,-178.43,179.94,178.71,177.49,176.18,174.87,173.66,172.22,171.13,169.77,168.68,167.54,166.16,164.84,163.87,163.05,162.26,161.43,160.31,158.83,158.23,157.62,157.10,156.65,156.19,155.19,154.44,154.07,153.93,153.48,152.86,152.89,152.95,152.72,152.76,152.92,152.84,153.02,153.26,153.56,153.91,154.30,154.73,155.25,155.73,156.24,157.00,157.91,158.87,159.63,159.54,160.79,162.07,162.84,163.61,164.68,165.60,166.60,167.72,168.98,169.86,170.86,171.90,173.15,174.43,175.69,176.83,177.95,179.02,-179.77,-178.35,-176.90,-175.67,-174.16,-172.72,-171.34,-169.86,-168.60,-167.38,-166.13,-164.89,-163.32,-162.22,-161.12,-160.11,-158.89,-157.61,-156.65,-155.83,-154.93,-154.29,-153.43,-152.87,-152.37,-151.82,-151.42,-150.97,-150.59,-150.38,-150.26,-150.22,-150.40,-150.64,-151.03,-151.47,-149.85,-150.45,-151.25,-151.30,-151.95,-152.43,-153.16,-153.90,-154.97,-155.33,-156.45,-157.46,-158.36,-159.58,-160.85,-162.10,-163.26,-164.57,-165.78,-167.09,-168.32,-169.63,-171.06,-172.39,-173.88,-175.15,-176.13,-177.66,-179.10,179.45,178.23,177.04,175.93,174.48,173.30,172.15,171.05,170.01,168.99,167.85,166.96,165.92,165.05,164.27,163.53,162.65,161.76,160.75,160.48,160.18,159.52,159.19,158.50,157.85,157.42,157.08,156.66,156.50,156.33,156.57,156.59,156.58,156.52,156.63,156.77,156.96,156.60,156.79,157.29,157.92,158.63,159.36,158.51,159.11,159.53,160.37,161.39,161.00,162.23,163.35,164.00,164.79,165.64,166.53,167.55,168.44,169.40,170.49,171.47,172.57,173.55,174.68,175.68,176.75,177.80,178.83,-179.99,-178.55,-177.35,-176.12,-174.93,-173.70,-172.32,-171.18,-169.88,-168.71,-167.60,-166.20,-165.00,-164.10,-163.28,-162.32,-161.27,-160.24,-159.47,-158.81,-158.11,-157.52,-156.83,-156.33,-155.80,-155.45,-154.57,-153.95,-153.68,-153.66,-153.49,-153.34,-153.26,-153.32,-153.43,-153.66,-153.88,-154.14,-154.50,-154.88,-155.35,-155.89,-156.46,-157.05,-157.72,-158.42,-159.19,-160.09,-161.03,-161.99,-162.95,-163.85,-164.84,-166.05,-167.30,-168.40,-169.61,-170.81,-172.04,-173.20,-174.45,-175.62,-176.79,-178.13,-179.48,179.32,178.29,177.25,176.07,175.15,174.23,173.31,172.39,171.24,170.17,169.28,168.44,167.64,166.90,166.19,164.53,163.88,163.11,162.51,161.95,161.47,160.88,160.80,160.50,160.16,159.83,159.45,159.11,158.94,158.58,158.73,159.00,159.23,159.43,159.81,158.80,158.55,159.15,159.63,160.15,160.01,160.02,160.67,161.29,161.44,162.18,162.72,163.18,163.81,164.53,165.29,166.00,166.74,167.57,168.38,169.23,170.18,171.09,171.99,172.81,173.79,174.77,175.93,176.82,177.65,178.61,179.65,-179.33,-178.15,-177.18,-176.08,-174.75,-173.72,-172.46,-171.36,-170.31,-169.23,-168.19,-166.96,-165.72,-164.79,-163.92,-163.03,-162.07,-161.35,-160.72,-160.14,-159.40,-158.90,-158.43,-157.98,-157.75,-157.59,-157.36,-156.82,-156.84,-156.90,-156.76,-156.60,-156.62,-156.66,-156.80,-156.95,-157.11,-157.37,-157.70,-158.05,-158.46,-158.94,-159.48,-160.07,-160.69,-161.33,-162.01,-162.85,-163.66,-164.54,-165.46,-166.36,-167.62,-168.63,-169.56,-170.56,-171.64,-172.76,-173.78,-174.84,-176.01,-177.07,-178.25,-179.31,179.61,178.64,177.76,176.80,175.81,174.79,173.88,173.05,172.23,171.40,170.55,169.86,169.17,168.52,167.75,166.96,165.81,165.57,165.23,164.86,164.18,163.50,163.06,162.57,162.23,161.91,161.60,161.28,161.10,161.32,161.18,161.15,161.19,161.26,161.42,160.70,160.54,160.93,161.43,161.68,161.66,162.27,162.83,162.95,163.47,164.03,164.44,164.97,165.53,166.08,166.70,167.39,168.04,168.75,169.44,170.11,170.97,171.85,172.69,173.55,174.38,175.18,176.18,177.03,177.93,178.67,179.47,-179.68,-178.54,-177.31,-176.32,-175.38,-174.34,-173.25,-172.30,-171.37,-170.53,-169.39,-168.31,-167.49,-166.63,-165.85,-165.11,-164.39,-163.59,-162.89,-162.51,-161.95,-161.50,-161.04,-160.68,-160.34,-159.58,-159.22,-158.92,-158.64,-158.51,-158.34,-158.21,-158.17,-158.23,-158.24,-158.42,-158.63,-158.84,-159.12,-159.47,-159.85,-160.29,-160.74,-161.30,-161.87,-162.48,-163.14,-163.88,-164.61,-165.39,-166.24,-167.00,-167.94,-168.81,-169.68,-170.77,-171.81,-172.51,-173.67,-174.61,-175.50,-176.50,-177.39,-178.49,-179.42,179.64,178.72,177.97,177.07,176.33,175.61,174.88,174.13,173.44,172.65,171.86,171.23,170.65,170.08,169.36,168.43,167.98,167.43,166.93,166.50,166.02,165.48,165.10,164.76,164.45,164.17,164.20,163.91,163.70,163.57,163.50,163.56,163.59,163.72,163.97,164.18,163.43,163.93,164.50,165.05,165.56,165.06,165.67,166.23,166.66,166.98,167.57,167.94,168.33,168.90,169.50,170.02,170.61,171.25,171.88,172.59,173.36,174.11,174.87,175.59,176.31,177.08,177.90,178.73,179.47,-179.76,-178.83,-177.89,-176.94,-176.09,-175.22,-174.31,-173.39,-172.26,-171.50,-170.79,-169.99,-169.21,-168.42,-167.81,-167.07,-166.20,-165.58,-164.88,-164.35,-163.93,-163.51,-163.13,-162.35,-161.88,-161.36,-161.05,-160.85,-160.58,-160.45,-160.35,-160.31,-160.30,-160.31,-160.38,-160.58,-160.80,-161.07,-161.36,-161.81,-162.25,-161.44,-162.32,-162.97,-163.05,-163.70,-164.40,-164.84,-165.49,-166.18,-166.86,-167.48,-168.23,-169.03,-169.84,-170.61,-171.46,-172.27,-173.14,-174.05,-174.89,-175.70,-176.53,-177.38,-178.39,-179.23,179.95,179.27,178.49,177.68,176.89,176.20,175.56,174.82,174.13,173.30,172.72,172.11,171.50,170.92,170.36,169.73,169.16,168.71,168.47,168.14,167.87,167.51,167.27,167.07,166.75,166.08,166.00,165.96,166.03,166.02,165.60,165.66,165.83,165.83,165.80,166.04,166.15,166.33,166.56,166.78,167.04,167.33,167.63,167.97,168.32,168.68,169.08,169.48,169.92,170.39,170.91,171.42,172.01,172.58,173.21,173.76,174.37,174.95,175.59,176.25,176.89,177.61,178.35,179.00,179.66,-179.69,-178.93,-178.11,-177.19,-176.46,-175.66,-174.89,-174.11,-173.30,-172.45,-171.81,-171.13,-170.52,-169.66,-169.05,-168.42,-167.88,-167.38,-166.77,-166.27,-166.03,-165.58,-165.33,-165.05,-164.91,-164.73,-164.47,-163.27,-163.14,-163.16,-163.07,-163.02,-162.95,-162.92,-162.93,-163.01,-163.19,-163.34,-163.51,-163.74,-164.02,-164.38,-164.70,-165.07,-165.48,-166.00,-166.60,-167.07,-167.65,-168.26,-168.85,-169.49,-170.13,-170.87,-171.65,-172.25,-172.91,-173.65,-174.44,-175.33,-176.04,-176.92,-177.64,-178.42,-179.26,-179.93,179.37,178.76,178.16,177.44,176.76,176.13,175.58,175.04,174.50,173.88,173.39,172.91,172.34,171.86,171.20,170.74,170.41,169.96,169.56,169.21,169.00,168.87,168.65,167.84,167.57,167.50,167.42,167.17,167.09,167.16,167.31,167.44,167.59,167.75,167.95,167.10,167.47,167.61,167.98,168.31,168.16,168.59,169.03,169.36,169.73,170.15,170.55,170.94,171.35,171.79,172.25,172.72,173.14,173.61,174.16,174.77,175.32,175.87,176.51,177.10,177.64,178.15,178.82,179.36,179.93,-179.46,-178.74,-177.94,-177.18,-176.58,-175.92,-175.25,-174.63,-173.86,-173.17,-172.22,-171.59,-171.04,-170.32,-169.77,-169.33,-168.86,-168.44,-167.90,-167.50,-167.15,-166.85,-166.76,-166.53,-166.37,-166.20,-166.11,-166.06,-165.68,-165.64,-165.81,-165.90,-165.97,-165.53,-165.71,-165.83,-165.84,-166.08,-166.24,-166.47,-166.74,-167.02,-167.40,-167.73,-168.11,-168.54,-169.00,-169.55,-170.03,-170.59,-171.15,-171.70,-172.30,-172.87,-173.55,-174.19,-174.83,-175.42,-176.19,-177.03,-177.76,-178.54,-178.92,-179.63,179.61,179.03,178.40,177.90,177.41,176.91,176.38,175.91,175.49,175.07,174.65,174.14,173.71,173.32,172.97,172.55,171.94,171.60,171.13,170.79,170.42,170.40,170.35,170.28,170.11,169.17,168.92,168.86,168.83,168.88,168.78,168.91,169.04,169.18,169.34,169.35,169.20,169.66,170.20,170.63,170.80,170.80,171.19,171.50,171.66,171.96,172.24,172.58,172.94,173.28,173.63,174.00,174.34,174.74,175.15,175.58,176.08,176.60,177.06,177.58,178.05,178.52,178.97,179.44,179.92,-179.51,-178.88,-178.28,-177.64,-176.99,-176.40,-175.86,-175.29,-174.76,-174.16,-173.39,-172.71,-172.17,-171.74,-171.28,-170.73,-170.34,-169.89,-169.53,-169.18,-168.83,-168.55,-168.29,-168.23,-168.13,-167.90,-167.78,-167.66,-167.60,-167.56,-166.16,-166.08,-166.03,-166.02,-166.20,-166.41,-166.27,-166.62,-167.00,-167.02,-167.37,-167.54,-167.83,-168.15,-168.44,-168.76,-169.09,-169.45,-169.95,-170.31,-170.80,-171.32,-171.82,-172.34,-172.87,-173.41,-174.00,-174.61,-175.18,-175.62,-176.16,-176.85,-177.46,-178.05,-178.61,-179.15,-179.81,179.70,179.31,178.88,178.49,178.11,177.62,177.22,176.74,176.37,176.00,175.68,175.32,174.99,173.94,173.50,173.22,172.96,172.67,172.40,172.15,171.92,171.64,171.44,171.47,171.31,171.09,171.10,171.20,171.31,171.34,171.39,171.05,171.08,171.25,171.31,171.32,171.57,171.76,171.90,172.13,172.30,172.52,172.73,172.97,173.25,173.50,173.83,174.14,174.45,174.82,175.15,175.54,175.95,176.36,176.76,177.18,177.56,177.97,178.45,178.81,179.17,179.62,-179.85,-179.35,-178.82,-178.29,-177.78,-177.28,-176.77,-176.14,-175.56,-175.09,-174.69,-174.28,-173.78,-173.36,-172.97,-172.80,-172.41,-171.97,-171.67,-171.44,-171.22,-170.89,-170.51,-169.85,-169.44,-169.30,-169.21,-169.03,-168.82,-168.77,-168.72,-168.64,-168.59,-168.61,-168.67,-168.74,-168.83,-168.93,-169.02,-169.18,-169.36,-169.65,-169.83,-170.16,-170.56,-170.76,-170.78,-171.13,-171.42,-171.81,-172.21,-172.59,-173.00,-173.50,-173.88,-174.33,-174.84,-175.30,-175.85,-176.32,-176.77,-177.21,-177.68,-178.20,-178.74,-179.22,-179.68,179.86,179.39,179.03,178.64,178.30,177.90,177.49,177.03,176.69,176.36,176.06,175.73,175.45,175.13,174.93,174.73,174.58,174.43,174.28,174.05,173.94,173.74,173.32,173.30,173.27,173.27,173.18,173.12,173.14,173.07,173.07,173.06,173.08,173.09,173.13,173.22,173.32,173.46,173.61,173.79,174.04,174.16,174.35,174.51,174.79,175.00,175.24,175.51,175.79,176.07,176.35,176.67,176.97,177.27,177.62,177.95,178.30,178.61,179.03,179.41,179.70,-179.93,-179.54,-179.13,-178.72,-178.28,-177.87,-177.44,-176.99,-176.56,-176.03,-175.63,-175.26,-174.90,-174.56,-174.25,-173.83,-173.53,-173.45,-173.16,-172.89,-172.61,-172.44,-172.23,-172.06,-171.87,-171.58,-171.32,-171.11,-171.17,-171.16,-171.07,-170.72,-170.72,-170.76,-170.79,-170.76,-170.86,-170.96,-171.05,-171.15,-171.27,-171.43,-171.60,-171.75,-172.04,-172.22,-172.48,-172.81,-172.85,-173.17,-173.59,-173.85,-174.13,-174.42,-174.74,-175.10,-175.47,-175.83,-176.20,-176.57,-176.95,-177.35,-177.75,-178.17,-178.56,-178.93,-179.40,-179.79,179.85,179.51,179.23,178.80,178.40,178.09,177.81,177.54,177.32,177.04,176.82,176.60,176.39,176.14,175.96,175.72,175.43,175.07,174.92,174.81,174.63,174.43,174.22,174.12,174.09,174.16,174.21,174.13,174.25,174.40,174.43,174.44,174.50,174.32,173.88,173.96,174.07,174.20,174.26,174.38,174.52,174.36,174.63,174.85,174.98,175.23,175.42,175.60,175.80,176.06,176.31,176.58,176.84,177.09,177.40,177.72,177.98,178.28,178.59,178.87,179.14,179.46,179.81,-179.93,-179.57,-179.20,-178.86,-178.44,-178.09,-177.76,-177.40,-176.89,-176.51,-176.22,-175.91,-175.60,-175.35,-175.11,-174.81,-174.59,-174.39,-174.21,-174.12,-173.81,-173.55,-173.40,-173.31,-173.25,-173.15,-173.10,-173.06,-172.84,-172.57,-172.49,-172.51,-172.49,-172.44,-172.50,-172.55,-172.48,-172.53,-172.63,-172.71,-172.79,-172.90,-173.21,-173.47,-173.70,-173.91,-174.12,-174.36,-174.59,-174.84,-175.12,-175.38,-175.62,-175.96,-176.18,-176.54,-176.91,-177.11,-177.43,-177.79,-178.07,-178.44,-178.72,-178.99,-179.32,-179.67,179.99,179.73,179.48,179.19,178.97,178.73,178.48,178.27,178.01,177.80,177.60,177.40,177.13,176.94,176.76,176.60,176.44,176.26,176.13,176.09,175.92,176.01,176.15,176.18,176.11,176.14,176.15,175.04,175.01,175.13,175.21,175.27,175.37,175.08,175.22,175.36,175.49,175.58,175.68,175.80,175.98,176.16,176.25,176.36,176.49,176.62,176.77,176.93,177.11,177.26,177.42,177.63,177.91,178.18,178.36,178.59,178.83,179.05,179.30,179.55,179.76,179.97,-179.80,-179.54,-179.24,-178.98,-178.69,-178.43,-178.15,-177.85,-177.60,-177.35,-176.97,-176.56,-176.29,-176.08,-175.87,-175.69,-175.53,-175.34,-175.19,-175.06,-174.90,-174.80,-174.75,-174.65,-174.64,-174.58,-174.50,-174.43,-174.36,-174.36,-174.21,-174.

]

L2=[177.60,177.66,177.72,177.77,177.83,177.89,177.93,177.97,178.02,178.07,178.11,178.15,178.20,178.25,178.30,178.34,178.40,178.45,178.51,178.56,178.61,178.67,178.71,178.77,178.81,178.85,178.88,178.92,178.95,178.99,179.03,179.07,179.10,179.15,179.19,179.23,179.28,179.33,179.38,179.42,179.46,179.51,179.54,179.57,179.60,179.63,179.66,179.69,179.72,179.76,179.80,179.83,179.87,179.90,179.94,179.96,179.99,-179.98,-179.95,-179.92,-179.90,-179.89,-179.85,-179.82,-179.80,-179.77,-179.75,-179.72,-179.69,-179.67,-179.65,-179.63,-179.60,-179.59,-179.57,-179.56,-179.55,-179.53,-179.52,-179.52,-179.51,-179.50,-179.49,-179.48,-179.48,-179.46,-179.45,-179.44,-179.44,-179.43,-179.43,-179.42,-179.42,-179.42,-179.42,-179.43,-179.43,-179.44,-179.44,-179.43,-179.43,-179.43,-179.42,-179.43,-179.43,-179.44,-179.45,-179.45,-179.45,-179.46,-179.46,-179.46,-179.46,-179.47,-179.46,-179.47,-179.47,-179.48,-179.52,-179.43,-179.35,-179.34,-179.30,-179.24,-179.26,-179.21,-179.20,-179.20,-179.18,-179.17,-179.09,-179.01,-178.94,-178.87,-178.80,-178.80,-178.76,-178.70,-178.71,-178.69,-178.61,-178.61,-178.59,-178.65,-178.69,-178.78,-178.90,-179.05,-179.22,-179.35,-179.61,-179.88,179.77,179.42,178.99,178.55,178.04,177.54,176.99,176.48,175.94,175.38,174.82,174.17,173.65,173.13,172.60,171.79,171.30,170.76,170.22,169.61,169.05,168.54,167.83,167.05,166.32,165.70,165.07,164.45,163.72,163.11,162.47,161.92,161.43,160.84,160.35,159.87,159.43,159.09,158.74,158.25,157.92,157.57,157.22,156.16,154.96,154.88,154.70,153.76,153.27,152.95,152.48,152.06,151.66,151.32,151.01,150.63,150.27,149.71,149.25,148.85,148.49,148.11,147.78,147.43,147.22,147.16,146.86,146.58,146.38,146.16,145.93,145.77,145.60,145.41,145.21,145.02,144.91,144.86,144.85,144.89,144.84,144.83,144.81,144.74,144.64,144.50,144.40,144.31,144.24,144.18,144.18,144.17,144.17,144.18,144.17,144.14,144.09,144.05,144.02,143.99,143.96,143.94,143.95,143.94,143.91,143.87,143.82,143.78,143.73,143.70,143.69,143.69,143.68,143.67,143.64,143.60,143.55,143.47,143.36,143.24,143.12,143.00,142.91,142.85,142.79,142.77,142.75,142.74,142.73,142.70,142.65,142.59,142.54,142.47,142.41,142.36,142.34,142.33,142.32,142.34,142.36,142.37,142.37,142.35,142.33,142.29,142.25,142.21,142.19,142.17,142.18,142.19,142.21,142.22,142.24,142.23,142.21,142.19,142.18,142.17,142.16,142.15,142.15,142.15,142.14,142.11,142.09,142.05,141.99,141.93,141.87,141.81,141.77,141.74,141.72,141.71,141.69,141.68,141.68,141.67,141.65,141.61,141.58,141.55,141.53,141.53,141.53,141.54,141.56,141.56,141.57,141.57,141.54,141.52,141.50,141.49,141.50,141.52,141.55,141.59,141.64,141.69,141.74,141.80,141.88,141.98,142.09,142.47,142.82,143.21,143.76,144.35,144.94,146.11,147.13,148.48,149.69,151.00,152.31,153.66,155.02,156.56,158.07,159.48,160.31,161.84,163.46,165.37,166.43,167.28,169.33,171.10,172.40,174.42,175.87,177.60,179.30,-179.11,-177.08,-175.34,-173.29,-171.60,-170.16,-169.11,-167.15,-165.19,-163.80,-162.25,-160.52,-158.71,-157.31,-156.00,-154.77,-153.68,-152.53,-152.07,-151.15,-150.29,-149.62,-148.85,-148.28,-147.83,-147.50,-147.20,-147.05,-147.18,-147.19,-146.65,-146.90,-147.01,-147.24,-147.51,-147.85,-148.36,-149.35,-149.73,-150.53,-151.30,-152.14,-153.12,-154.16,-155.20,-156.36,-157.53,-158.81,-160.19,-161.33,-162.81,-164.21,-165.60,-167.19,-168.70,-170.26,-171.82,-173.51,-175.36,-177.15,-178.72,179.65,178.19,176.61,175.18,173.83,172.48,170.94,169.62,168.18,166.91,165.78,164.61,163.48,162.35,161.11,160.07,158.97,158.00,156.72,155.74,155.00,154.35,153.79,153.17,152.63,151.96,151.61,151.48,150.87,150.59,150.56,150.47,150.08,149.89,149.79,149.91,150.20,150.46,150.73,150.85,151.00,151.46,152.04,152.60,153.22,153.92,154.60,155.32,156.12,157.01,157.73,158.50,159.42,160.34,161.36,162.49,163.62,164.69,165.87,167.34,168.61,170.17,171.23,172.45,173.78,175.01,176.21,177.72,179.05,-179.75,-178.29,-176.80,-175.07,-173.44,-171.92,-170.41,-168.90,-167.21,-165.55,-164.12,-162.79,-161.71,-160.21,-159.04,-157.90,-156.75,-155.42,-154.12,-153.00,-152.10,-151.33,-150.58,-149.86,-149.14,-148.46,-147.86,-147.48,-147.22,-146.90,-146.79,-146.77,-146.87,-147.07,-147.41,-147.75,-148.39,-149.16,-149.13,-149.67,-150.48,-151.06,-151.67,-152.08,-153.14,-153.87,-154.81,-155.77,-157.17,-158.58,-159.55,-160.70,-162.01,-163.24,-164.63,-166.08,-167.45,-168.95,-170.44,-172.10,-173.42,-174.96,-176.53,-178.11,-179.57,178.61,177.37,176.08,174.81,173.58,172.14,170.95,169.73,168.64,167.34,166.37,165.12,164.20,163.22,162.42,161.55,160.75,159.07,157.74,157.08,156.50,155.98,155.46,154.57,154.12,153.56,153.14,152.82,152.54,152.15,152.01,151.93,151.93,151.98,152.10,152.19,152.42,152.51,153.14,153.84,154.30,153.81,154.48,155.29,155.80,155.99,157.06,157.44,158.17,159.03,159.78,160.62,161.66,162.65,163.59,164.68,165.91,167.09,168.34,169.28,170.38,171.54,172.79,173.89,175.38,176.41,177.55,178.70,179.90,-178.90,-177.32,-176.00,-174.62,-173.03,-171.69,-170.15,-168.79,-167.50,-166.22,-164.98,-163.67,-162.41,-161.33,-160.28,-159.11,-157.87,-156.94,-156.08,-155.27,-154.41,-153.58,-152.95,-152.43,-151.97,-151.59,-151.23,-151.10,-150.96,-150.96,-151.00,-151.27,-151.48,-151.79,-151.79,-151.90,-152.30,-152.69,-153.02,-153.60,-154.18,-154.74,-155.46,-156.17,-156.96,-157.82,-158.68,-159.66,-160.57,-161.65,-162.90,-164.03,-165.43,-166.76,-167.91,-169.22,-170.60,-172.05,-173.29,-174.62,-176.10,-177.45,-178.94,179.72,178.60,177.35,176.23,175.14,173.69,172.57,171.49,170.46,169.43,168.39,167.25,166.34,165.51,164.69,163.74,162.81,161.44,160.38,159.68,159.05,158.41,157.84,157.67,157.03,156.66,156.17,155.87,155.77,155.85,155.15,154.64,154.43,154.67,155.01,154.92,154.88,154.89,155.34,155.73,155.95,156.33,156.81,157.34,157.83,158.39,158.97,159.53,160.16,160.92,161.68,162.48,163.33,164.17,165.04,165.90,166.80,167.82,168.97,170.05,171.09,172.20,173.17,174.24,175.43,176.41,177.47,178.52,179.63,-179.27,-177.75,-176.55,-175.32,-174.15,-172.96,-171.55,-170.31,-169.22,-167.90,-166.81,-165.59,-164.58,-163.59,-162.60,-161.68,-160.23,-159.19,-158.46,-157.69,-156.98,-156.15,-155.57,-155.04,-154.45,-154.04,-153.64,-153.36,-153.12,-153.00,-152.89,-152.91,-153.00,-153.28,-152.23,-152.92,-153.29,-153.45,-154.08,-154.49,-155.02,-155.65,-156.27,-156.91,-157.63,-158.38,-159.22,-160.16,-161.11,-162.07,-163.08,-164.16,-165.39,-166.42,-167.59,-168.82,-170.10,-171.61,-172.77,-173.98,-175.21,-176.44,-177.81,-179.04,179.57,178.52,177.45,176.42,175.21,174.30,173.34,172.33,171.39,170.32,169.26,168.45,167.66,166.90,166.14,164.88,163.89,163.23,162.58,161.91,161.34,160.73,160.73,160.52,160.09,159.43,159.20,158.96,158.73,158.64,158.10,157.78,158.36,158.72,159.06,158.85,158.76,159.02,159.49,159.59,159.87,160.50,160.81,161.25,161.77,162.27,162.80,163.39,164.00,164.60,165.27,165.96,166.73,167.52,168.28,169.16,170.08,171.05,171.94,172.71,173.57,174.48,175.50,176.39,177.37,178.47,179.41,-179.59,-178.35,-177.19,-176.01,-174.89,-173.92,-172.50,-171.42,-170.29,-169.20,-168.20,-166.99,-166.03,-165.13,-164.08,-162.98,-162.03,-161.24,-160.52,-159.80,-159.04,-158.47,-157.68,-157.26,-156.85,-156.50,-156.18,-155.79,-155.62,-155.52,-155.48,-155.63,-155.81,-155.88,-156.46,-157.17,-157.87,-157.88,-158.15,-158.52,-158.87,-159.32,-159.71,-160.32,-160.87,-161.41,-162.14,-162.89,-163.59,-164.42,-165.38,-166.37,-167.46,-168.39,-169.45,-170.48,-171.49,-172.70,-173.80,-174.86,-175.95,-177.08,-178.26,-179.43,179.47,178.50,177.59,176.70,175.70,175.10,174.11,173.10,172.26,171.44,170.54,169.80,169.04,168.30,167.60,167.00,166.13,165.57,164.60,164.04,163.81,163.54,162.97,162.49,162.17,161.71,161.43,161.09,160.92,160.79,160.67,160.59,160.55,160.51,160.50,160.31,160.32,160.69,160.97,161.51,161.99,162.50,161.71,162.52,163.22,163.75,164.16,164.52,165.09,165.73,166.06,166.76,167.56,168.16,168.83,169.67,170.52,171.43,172.23,173.06,173.86,174.78,175.63,176.56,177.39,178.28,179.12,-179.99,-178.86,-177.81,-176.65,-175.68,-174.79,-173.74,-172.56,-171.48,-170.40,-169.47,-168.45,-167.47,-166.60,-165.79,-165.03,-164.29,-163.64,-163.13,-162.34,-161.82,-161.37,-160.85,-160.55,-159.87,-159.31,-158.87,-158.50,-158.49,-158.10,-157.90,-157.87,-157.83,-157.84,-157.85,-157.97,-158.16,-158.35,-158.61,-158.94,-159.31,-159.72,-160.23,-160.78,-161.33,-161.94,-162.57,-163.25,-164.01,-164.75,-165.55,-166.44,-167.29,-168.30,-169.25,-170.07,-170.94,-171.93,-172.89,-173.85,-174.93,-175.94,-176.85,-178.00,-178.99,-179.89,179.15,178.16,177.19,176.39,175.65,174.87,174.11,173.37,172.56,171.90,171.07,170.44,169.84,169.28,168.56,167.21,166.40,165.89,165.50,165.08,164.46,164.09,163.78,163.49,163.22,163.25,163.12,162.98,162.86,162.73,162.73,162.23,162.40,162.72,162.91,162.92,162.50,163.05,163.55,164.09,163.65,164.27,164.88,164.95,165.34,165.98,166.24,166.90,167.47,168.00,168.61,169.23,169.84,170.52,171.18,172.02,172.81,173.51,174.29,175.09,175.85,176.75,177.51,178.30,179.12,-179.95,-179.03,-178.00,-177.10,-176.16,-175.26,-174.42,-173.48,-172.48,-171.61,-170.78,-169.99,-169.14,-168.62,-167.89,-167.23,-166.51,-165.83,-165.27,-164.78,-164.29,-163.34,-162.59,-162.47,-162.12,-161.95,-161.75,-161.31,-161.06,-160.93,-160.84,-160.80,-160.64,-160.62,-160.70,-160.80,-160.96,-161.19,-161.42,-161.72,-162.08,-162.48,-162.93,-163.42,-163.95,-164.52,-165.14,-165.77,-166.74,-167.29,-168.01,-168.85,-169.44,-170.22,-171.07,-171.83,-172.68,-173.53,-174.43,-175.30,-176.14,-176.94,-177.82,-178.73,-179.74,179.38,178.67,177.97,177.20,176.32,175.64,174.98,174.37,173.64,172.87,172.25,171.43,170.77,170.21,169.68,169.13,168.64,168.09,167.66,167.29,166.94,166.50,166.20,165.91,165.36,165.01,164.96,164.83,164.90,164.95,165.04,165.17,165.06,164.68,165.24,165.69,166.10,166.37,166.38,166.86,167.30,167.44,167.84,168.16,168.47,168.82,169.23,169.71,170.17,170.61,171.05,171.57,172.09,172.59,173.13,173.69,174.39,175.04,175.63,176.27,176.93,177.59]