

TP2 - Ex.2

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Estruturas Criptográficas

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2. Uma das aplicações mais importantes do teorema chinês dos restos (CRT) em criptografia é a transformada NTT "Number Theoretic Transform". Esta transformada é uma componente importantes de "standards" PQC como o Kyber e o Dilithium mas também de outros algoritmos submetidos ao concurso NIST PQC. A transformação NTT tem várias opções e aquela que está apresentada no +Capítulo 4: Problemas Difíceis usa o CRT. Neste problema pretende-se uma implementação Sagemath do NTT-CRT tal como é descrito nesse documento.

Estes são só os imports que precisamos para o nosso programa

```
In [ ]: from sage.rings.polynomial.polynomial_ring_constructor import PolynomialRing
from sage.rings.finite_rings.finite_field_constructor import GF, FiniteField
from sage.rings.polynomial.polynomial_zmod_flint import Polynomial_zmod_flint
from sage.all import is_prime
from sage.arith.misc import CRT_basis
```

O primeiro passo é a escolha de um N da forma 2^d e um primo q que verifique

$$q \equiv 1 \pmod{2N}$$

```
In [ ]: q = 40961
d = 12
N = pow(2,d) #4096

if ( q % (2* N) == 1):
    print("A regra q ≡ 1 mod 2N é cumprida")
    while True:
        if is_prime(q):
            print(f"q tem o valor de:{q}")
            break
        q += 2*N
    else:
        print("A regra q ≡ 1 mod 2N não é cumprida")

Zw = PolynomialRing(GF(q),name= "w" )
w = Zw.gen()
```

A regra $q \equiv 1 \pmod{2N}$ é cumprida
q tem o valor de:40961

Usando a estratégia apresentada no capítulo 4

1-Calculo dos monómios s e q

```
In [ ]: g = (w**N + 1)
xi = g.roots(multiplicities=False)[1]
s = [xi * (xi**2)**i for i in range(N)]
q_i = [(w - s[i]) for i in range(N)]
```

2-Calculo do NTT

```
In [ ]: def NTT(xi, N1,f):
    if N1 == 1:
        return ([f[0]])

    f_plus, f_minus = split(f)
    bar_f_plus = NTT(xi**2, N1//2, f_plus)
    bar_f_minus = NTT(xi**2, N1//2, f_minus)

    s = xi

    bar_f = [0] * N1

    for i in range(N1//2):
        bar_f[i] = (bar_f_plus[i] + s * bar_f_minus[i]).lift()
        bar_f[i + N1//2] = (bar_f_plus[i] - s * bar_f_minus[i]).lift()
        s = s * (xi**2)

    return bar_f

def split(f):
    f_plus = sum(f[i] * w**(i/2) for i in range(f.degree()+1) if i % 2 == 0) + 0*
    f_minus = sum(f[i] * w**((i-1)/2) for i in range(f.degree()+1) if i % 2 != 0)

    return f_plus, f_minus
```

3-Operações básicas do nosso anel

```
In [ ]: def subtracao_componentes(f, g):
    return [f[i] - g[i] for i in range(N)]

def soma_componentes(f, g):
    return [f[i] + g[i] for i in range(N)]

def multiplicacao_componentes(f, g):
    return [f[i] * g[i] for i in range(N)]
```

4-Reconstrução do NTT

```
In [ ]: def reconstruir_por_crt(bar_f):
    q_i = [(w - s[i]) for i in range(N)]
    mu_i = CRT_basis(q_i)
    return sum(bar_f[i] * mu_i[i] for i in range(N))
```

Teste do uso da tecnica NTT em uma função e de seguida a sua reconstrução

```
In [ ]: f = Zw.random_element(degree=N-1)

residuos_f = NTT(xi,N,f)

f1 = reconstruir_por_crt(residuos_f, )
print (f == f1)
```

True

Operações entre dois polinômios

```
In [ ]: ##### teste
f = Zw.random_element(degree=N-1)
g = Zw.random_element(degree=N-1)

residuos_f = NTT(xi,N,f)
residuos_g = NTT(xi,N,g)

op = input("Diga a operação que deseja realizar(+,*,-)")

# Realizando a operação resíduos
if (op == "*"):
    residuos_resultado = multiplicacao_componentes(residuos_f, residuos_g)
    # Reconstruindo o polinômio resultante usando CRT
    resultado_crt = reconstruir_por_crt(residuos_resultado)
elif (op == "+"):
    residuos_resultado = soma_componentes(residuos_f, residuos_g)
    print("Resultado correto? ")
    # Reconstruindo o polinômio resultante usando CRT
    resultado_crt = reconstruir_por_crt(residuos_resultado)
    print(f+g == resultado_crt)
elif (op == "-"):
    residuos_resultado = subtracao_componentes(residuos_f, residuos_g)
    print("Resultado correto? ")
    # Reconstruindo o polinômio resultante usando CRT
    resultado_crt = reconstruir_por_crt(residuos_resultado)
    print(f-g == resultado_crt)

print("Resultado da operação "+op+":", resultado_crt)
```

Resultado da operação *: 28577*w^4095 + 31320*w^4094 + 30228*w^4093 + 33994*w^4092 + 29323*w^4091 + 11276*w^4090 + 28500*w^4089 + 36981*w^4088 + 10534*w^4087 + 14142*w^4086 + 29608*w^4085 + 36409*w^4084 + 25534*w^4083 + 32847*w^4082 + 36648*w^4081 + 10859*w^4080 + 22698*w^4079 + 35069*w^4078 + 4272*w^4077 + 21474*w^4076 + 8906*w^4075 + 33006*w^4074 + 9058*w^4073 + 24767*w^4072 + 25841*w^4071 + 32875*w^4070 + 21103*w^4069 + 25262*w^4068 + 33996*w^4067 + 11349*w^4066 + 18060*w^4065 + 22491*w^4064 + 24660*w^4063 + 23186*w^4062 + 13640*w^4061 + 30677*w^4060 + 8518*w^4059 + 21203*w^4058 + 18721*w^4057 + 26374*w^4056 + 25633*w^4055 + 4791*w^4054 + 13293*w^4053 + 21574*w^4052 + 34756*w^4051 + 28965*w^4050 + 21338*w^4049 + 9036*w^4048 + 11619*w^4047 + 2207*w^4046 + 29132*w^4045 + 25758*w^4044 + 29875*w^4043 + 7952*w^4042 + 15059*w^4041 + 13480*w^4040 + 8517*w^4039 + 6157*w^4038 + 10013*w^4037 + 12338*w^4036 + 14328*w^4035 + 814*w^4034 + 17961*w^4033 + 9897*w^4032 + 34720*w^4031 + 28130*w^4030 + 7869*w^4029 + 40777*w^4028 + 30188*w^4027 + 29753*w^4026 + 38791*w^4025 + 21040*w^4024 + 26288*w^4023 + 4821*w^4022 + 24766*w^4021 + 35933*w^4020 + 14863*w^4019 + 25255*w^4018 + 18191*w^4017 + 23656*w^4016 + 31611*w^4015 + 8992*w^4014 + 5*w^4013 + 31532*w^4012 + 14146*w^4011 + 38031*w^4010 + 24450*w^4009 + 9293*w^4008 + 27701*w^4007 + 7500*w^4006 + 13906*w^4005 + 18362*w^4004 + 27171*w^4003 + 28577*w^4002 + 31170*w^4001 + 23108*w^4000 + 27254*w^3999 + 15965*w^3998 + 17764*w^3997 + 23441*w^3996 + 28319*w^3995 + 31252*w^3994 + 34769*w^3993 + 1425*w^3992 + 18070*w^3991 + 25254*w^3990 + 25447*w^3989 + 26812*w^3988 + 37409*w^3987 + 1442*w^3986 + 40718*w^3985 + 40776*w^3984 + 23505*w^3983 + 40176*w^3982 + 26342*w^3981 + 29248*w^3980 + 14714*w^3979 + 37865*w^3978 + 9717*w^3977 + 33917*w^3976 + 29123*w^3975 + 287*w^3974 + 26430*w^3973 + 6573*w^3972 + 36704*w^3971 + 15481*w^3970 + 36009*w^3969 + 15270*w^3968 + 3847*w^3967 + 14548*w^3966 + 37040*w^3965 + 37477*w^3964 + 32998*w^3963 + 10070*w^3962 + 13083*w^3961 + 24758*w^3960 + 2596*w^3959 + 29799*w^3958 + 24704*w^3957 + 4763*w^3956 + 37744*w^3955 + 24035*w^3954 + 15531*w^3953 + 37627*w^3952 + 27247*w^3951 + 25879*w^3950 + 4761*w^3949 + 5136*w^3948 + 13367*w^3947 + 15633*w^3946 + 8321*w^3945 + 23697*w^3944 + 10918*w^3943 + 15093*w^3942 + 25345*w^3941 + 4133*w^3940 + 34433*w^3939 + 21025*w^3938 + 13884*w^3937 + 7663*w^3936 + 23649*w^3935 + 24159*w^3934 + 28376*w^3933 + 11376*w^3932 + 8800*w^3931 + 6967*w^3930 + 40033*w^3929 + 24876*w^3928 + 6644*w^3927 + 25726*w^3926 + 30067*w^3925 + 16194*w^3924 + 9071*w^3923 + 21613*w^3922 + 8652*w^3921 + 37335*w^3920 + 28253*w^3919 + 5101*w^3918 + 22229*w^3917 + 11521*w^3916 + 3510*w^3915 + 2455*w^3914 + 31093*w^3913 + 4843*w^3912 + 2419*w^3911 + 35880*w^3910 + 26693*w^3909 + 1489*w^3908 + 4186*w^3907 + 7567*w^3906 + 21751*w^3905 + 21823*w^3904 + 23197*w^3903 + 4064*w^3902 + 30721*w^3901 + 31099*w^3900 + 7074*w^3899 + 11008*w^3898 + 33739*w^3897 + 18429*w^3896 + 27010*w^3895 + 15451*w^3894 + 6418*w^3893 + 16853*w^3892 + 21621*w^3891 + 22391*w^3890 + 40421*w^3889 + 16234*w^3888 + 33588*w^3887 + 2724*w^3886 + 33706*w^3885 + 7953*w^3884 + 2957*w^3883 + 20538*w^3882 + 961*w^3881 + 30211*w^3880 + 16231*w^3879 + 24932*w^3878 + 6402*w^3877 + 37503*w^3876 + 29107*w^3875 + 4142*w^3874 + 37081*w^3873 + 16177*w^3872 + 10587*w^3871 + 27765*w^3870 + 7888*w^3869 + 37495*w^3868 + 35139*w^3867 + 36377*w^3866 + 5858*w^3865 + 31696*w^3864 + 10071*w^3863 + 3660*w^3862 + 3386*w^3861 + 37195*w^3860 + 22806*w^3859 + 32894*w^3858 + 23801*w^3857 + 4276*w^3856 + 15598*w^3855 + 19860*w^3854 + 17058*w^3853 + 2058*w^3852 + 4496*w^3851 + 403*w^3850 + 32644*w^3849 + 24841*w^3848 + 1955*w^3847 + 37583*w^3846 + 25187*w^3845 + 13984*w^3844 + 9047*w^3843 + 32915*w^3842 + 18418*w^3841 + 7651*w^3840 + 34466*w^3839 + 17722*w^3838 + 39411*w^3837 + 29088*w^3836 + 17428*w^3835 + 40062*w^3834 + 34097*w^3833 + 4661*w^3832 + 17194*w^3831 + 18358*w^3830 + 30039*w^3829 + 27941*w^3828 + 9970*w^3827 + 4062*w^3826 + 479*w^3825 + 9073*w^3824 + 15425*w^3823 + 23170*w^3822 + 24225*w^3821 + 23698*w^3820 + 30998*w^3819 + 4993*w^3818 + 8866*w^3817 + 32966*w^3816 + 37335*w^3815 + 2298*w^3814 + 33082*w^3813 + 40594*w^3812 + 33759*w^3811 + 12067*w^3810 + 38715*w^3809 + 25416*w^3808 + 7596*w^3807 + 20812*w^3806 + 19045*w^3805 + 40114*w^3804 + 11236*w^3803 + 815*w^3802 + 6282*w^3801 + 38897*w^3800 + 24416*w^3799 + 9403*w^3798 + 33247*w^3797 + 6063*w^3796 + 28586*w^3795 + 8670*w^3794 + 9182*w^3793 + 35848*w^3792 + 40635*w^3791 + 40918*w^3790 + 15386*w^3789 + 33081*w^3788 + 33990*w^3787 + 8860*w^3786 + 33439*w^3785 + 15925*w^3784 + 10562*w^3783 + 37896*w^3782 + 36369*w^3781 + 5206*w^3780 + 11668*w^3779 + 1908*w^3778 + 35511*w^3777 + 37248*w^3776 + 39486*w^3775 + 23610*w^3774 + 39227*w^3773 + 30579*w^3772 + 37981*w^3771 + 30946*w^3770 + 22097*w^3769 + 15481*w^3768 + 13738*w^3767 + 6579*w^3766 + 25839*w^3765 + 22886*w^3764 + 4985*w^3763 + 16874*w^3762 + 5370*w^3761 + 36571*w^3760 + 21944*w^3759 + 18174*w^3758 + 1003*w^3757 + 26295*w^3756 + 32018*w^3755 + 27898*w^3754 + 20051*w^3753 + 5764*w^3752 + 6184*w^3751 + 13856*w^3750 + 5220*w^3749 + 25385*w^3748 + 16148*w^3747 + 34686*w^3746 + 38153*w^3745 + 4548*w^3744 + 12898*w^3743 + 31603*w^3742 + 16689*w^3741 + 18581*w^3740 + 31216*w

$$\begin{aligned} &^3739 + 34835*w^3738 + 28735*w^3737 + 14049*w^3736 + 38918*w^3735 + 17129*w^3734 \\ &+ 22579*w^3733 + 24114*w^3732 + 5909*w^3731 + 23132*w^3730 + 25074*w^3729 + 36781 \\ &*w^3728 + 2510*w^3727 + 15138*w^3726 + 19489*w^3725 + 18911*w^3724 + 12413*w^3723 \\ &+ 9058*w^3722 + 4240*w^3721 + 6076*w^3720 + 24403*w^3719 + 4243*w^3718 + 17745*w^ \\ &3717 + 14677*w^3716 + 17988*w^3715 + 12968*w^3714 + 32694*w^3713 + 34012*w^3712 + \\ &11702*w^3711 + 23806*w^3710 + 24341*w^3709 + 35315*w^3708 + 17806*w^3707 + 30889* \\ &w^3706 + 6447*w^3705 + 38192*w^3704 + 19570*w^3703 + 19822*w^3702 + 37146*w^3701 \\ &+ 14397*w^3700 + 305*w^3699 + 40607*w^3698 + 34740*w^3697 + 23309*w^3696 + 28566* \\ &w^3695 + 39506*w^3694 + 25141*w^3693 + 12220*w^3692 + 28168*w^3691 + 27094*w^3690 \\ &+ 25300*w^3689 + 23411*w^3688 + 5057*w^3687 + 32583*w^3686 + 13470*w^3685 + 3824* \\ &w^3684 + 3660*w^3683 + 30699*w^3682 + 27568*w^3681 + 19752*w^3680 + 17557*w^3679 \\ &+ 36506*w^3678 + 53*w^3677 + 8162*w^3676 + 21216*w^3675 + 38381*w^3674 + 34531*w^ \\ &3673 + 22459*w^3672 + 1534*w^3671 + 29202*w^3670 + 2997*w^3669 + 16568*w^3668 + 4 \\ &0290*w^3667 + 5027*w^3666 + 26825*w^3665 + 37339*w^3664 + 11522*w^3663 + 4659*w^3 \\ &662 + 32570*w^3661 + 14683*w^3660 + 15924*w^3659 + 28870*w^3658 + 17992*w^3657 + \\ &22770*w^3656 + 28210*w^3655 + 34521*w^3654 + 18345*w^3653 + 10489*w^3652 + 28757* \\ &w^3651 + 7511*w^3650 + 14887*w^3649 + 26601*w^3648 + 17613*w^3647 + 9598*w^3646 + \\ &4969*w^3645 + 26826*w^3644 + 629*w^3643 + 5010*w^3642 + 39499*w^3641 + 37964*w^36 \\ &40 + 22226*w^3639 + 4787*w^3638 + 34461*w^3637 + 13565*w^3636 + 6620*w^3635 + 325 \\ &09*w^3634 + 35513*w^3633 + 29439*w^3632 + 40437*w^3631 + 36149*w^3630 + 23411*w^3 \\ &629 + 2657*w^3628 + 18190*w^3627 + 7347*w^3626 + 7940*w^3625 + 28857*w^3624 + 104 \\ &91*w^3623 + 21360*w^3622 + 23999*w^3621 + 6280*w^3620 + 26866*w^3619 + 33337*w^36 \\ &18 + 39468*w^3617 + 28132*w^3616 + 20597*w^3615 + 18022*w^3614 + 5549*w^3613 + 23 \\ &709*w^3612 + 14930*w^3611 + 7365*w^3610 + 20547*w^3609 + 12790*w^3608 + 14215*w^3 \\ &607 + 38688*w^3606 + 15796*w^3605 + 39127*w^3604 + 14121*w^3603 + 35706*w^3602 + \\ &32830*w^3601 + 25454*w^3600 + 1136*w^3599 + 4383*w^3598 + 26761*w^3597 + 11805*w^ \\ &3596 + 23741*w^3595 + 27917*w^3594 + 862*w^3593 + 39349*w^3592 + 4941*w^3591 + 20 \\ &844*w^3590 + 5379*w^3589 + 4083*w^3588 + 21727*w^3587 + 35380*w^3586 + 11101*w^35 \\ &85 + 2321*w^3584 + 23386*w^3583 + 8310*w^3582 + 36852*w^3581 + 18556*w^3580 + 587 \\ &8*w^3579 + 4078*w^3578 + 38580*w^3577 + 12554*w^3576 + 10245*w^3575 + 19947*w^357 \\ &4 + 24267*w^3573 + 18898*w^3572 + 16495*w^3571 + 4988*w^3570 + 21626*w^3569 + 236 \\ &33*w^3568 + 37348*w^3567 + 5152*w^3566 + 12460*w^3565 + 17051*w^3564 + 21179*w^35 \\ &63 + 7526*w^3562 + 17954*w^3561 + 21060*w^3560 + 9142*w^3559 + 284*w^3558 + 10536 \\ &*w^3557 + 22160*w^3556 + 1250*w^3555 + 33373*w^3554 + 4482*w^3553 + 32770*w^3552 \\ &+ 3735*w^3551 + 21820*w^3550 + 29607*w^3549 + 7975*w^3548 + 7213*w^3547 + 1661*w^ \\ &3546 + 38334*w^3545 + 29973*w^3544 + 23203*w^3543 + 5317*w^3542 + 21545*w^3541 + \\ &11122*w^3540 + 25233*w^3539 + 7942*w^3538 + 23709*w^3537 + 39836*w^3536 + 11292*w \\ &^3535 + 4716*w^3534 + 31150*w^3533 + 12801*w^3532 + 28550*w^3531 + 27265*w^3530 + \\ &25442*w^3529 + 13798*w^3528 + 16807*w^3527 + 35670*w^3526 + 2412*w^3525 + 14315*w \\ &^3524 + 16375*w^3523 + 31142*w^3522 + 1407*w^3521 + 33707*w^3520 + 20114*w^3519 + \\ &7481*w^3518 + 4561*w^3517 + 26750*w^3516 + 38149*w^3515 + 518*w^3514 + 19657*w^35 \\ &13 + 7525*w^3512 + 6119*w^3511 + 4369*w^3510 + 350*w^3509 + 1190*w^3508 + 40829*w \\ &^3507 + 40434*w^3506 + 22910*w^3505 + 29554*w^3504 + 31016*w^3503 + 31871*w^3502 \\ &+ 14014*w^3501 + 16259*w^3500 + 15953*w^3499 + 30001*w^3498 + 20365*w^3497 + 3793 \\ &3*w^3496 + 6597*w^3495 + 38621*w^3494 + 31163*w^3493 + 22220*w^3492 + 21153*w^349 \\ &1 + 33710*w^3490 + 7863*w^3489 + 3869*w^3488 + 38504*w^3487 + 1513*w^3486 + 3695* \\ &w^3485 + 33434*w^3484 + 40755*w^3483 + 35941*w^3482 + 14093*w^3481 + 33500*w^3480 \\ &+ 4621*w^3479 + 8796*w^3478 + 6309*w^3477 + 12346*w^3476 + 17070*w^3475 + 5096*w^ \\ &3474 + 29698*w^3473 + 17856*w^3472 + 12333*w^3471 + 35383*w^3470 + 17893*w^3469 + \\ &24381*w^3468 + 2777*w^3467 + 27622*w^3466 + 1245*w^3465 + 8591*w^3464 + 6469*w^34 \\ &63 + 8800*w^3462 + 29218*w^3461 + 13655*w^3460 + 34395*w^3459 + 8868*w^3458 + 357 \\ &45*w^3457 + 11100*w^3456 + 19542*w^3455 + 37488*w^3454 + 12475*w^3453 + 28042*w^3 \\ &452 + 24926*w^3451 + 33748*w^3450 + 25096*w^3449 + 7756*w^3448 + 23356*w^3447 + 3 \\ &7721*w^3446 + 13665*w^3445 + 29289*w^3444 + 16417*w^3443 + 4200*w^3442 + 22435*w^ \\ &3441 + 31295*w^3440 + 35004*w^3439 + 34750*w^3438 + 37187*w^3437 + 9222*w^3436 + \\ &8104*w^3435 + 279*w^3434 + 13340*w^3433 + 11897*w^3432 + 5798*w^3431 + 12076*w^34 \\ &30 + 25252*w^3429 + 22039*w^3428 + 15026*w^3427 + 32028*w^3426 + 5827*w^3425 + 11 \\ &245*w^3424 + 39196*w^3423 + 12655*w^3422 + 18230*w^3421 + 36749*w^3420 + 36494*w^ \\ &3419 + 18737*w^3418 + 10377*w^3417 + 16702*w^3416 + 8815*w^3415 + 10928*w^3414 + \\ &29190*w^3413 + 18983*w^3412 + 7683*w^3411 + 2485*w^3410 + 34555*w^3409 + 40779*w^ \\ &3408 + 4826*w^3407 + 38103*w^3406 + 3660*w^3405 + 34499*w^3404 + 14772*w^3403 + 1 \\ &2219*w^3402 + 14734*w^3401 + 17454*w^3400 + 13596*w^3399 + 7815*w^3398 + 25798*w^ \\ &3397 + 32281*w^3396 + 14395*w^3395 + 3243*w^3394 + 25575*w^3393 + 29094*w^3392 + \\ &38515*w^3391 + 609*w^3390 + 17721*w^3389 + 29349*w^3388 + 25909*w^3387 + 15819*w^ \\ &3386 + 19375*w^3385 + 11729*w^3384 + 437*w^3383 + 26733*w^3382 + 14038*w^3381 + 3 \end{aligned}$$

2057*w^3380 + 16269*w^3379 + 14262*w^3378 + 12618*w^3377 + 15419*w^3376 + 18283*w^3375 + 19147*w^3374 + 258*w^3373 + 25170*w^3372 + 34564*w^3371 + 15532*w^3370 + 29282*w^3369 + 38501*w^3368 + 36344*w^3367 + 17583*w^3366 + 30890*w^3365 + 12309*w^3364 + 36333*w^3363 + 20999*w^3362 + 14615*w^3361 + 10021*w^3360 + 22127*w^3359 + 23954*w^3358 + 23957*w^3357 + 1449*w^3356 + 19410*w^3355 + 26667*w^3354 + 18869*w^3353 + 4414*w^3352 + 33642*w^3351 + 16838*w^3350 + 35431*w^3349 + 10268*w^3348 + 39885*w^3347 + 1395*w^3346 + 12050*w^3345 + 39000*w^3344 + 35473*w^3343 + 30117*w^3342 + 34319*w^3341 + 28361*w^3340 + 8106*w^3339 + 21466*w^3338 + 26876*w^3337 + 15269*w^3336 + 18943*w^3335 + 29420*w^3334 + 20754*w^3333 + 18188*w^3332 + 39104*w^3331 + 16270*w^3330 + 9322*w^3329 + 30413*w^3328 + 7602*w^3327 + 8290*w^3326 + 37046*w^3325 + 30906*w^3324 + 778*w^3323 + 27156*w^3322 + 31734*w^3321 + 37214*w^3320 + 9593*w^3319 + 14871*w^3318 + 40267*w^3317 + 29733*w^3316 + 26174*w^3315 + 764*w^3314 + 34850*w^3313 + 37334*w^3312 + 18114*w^3311 + 1827*w^3310 + 22160*w^3309 + 10529*w^3308 + 11032*w^3307 + 34765*w^3306 + 13864*w^3305 + 33567*w^3304 + 1104*w^3303 + 6032*w^3302 + 30355*w^3301 + 17090*w^3300 + 27039*w^3299 + 37159*w^3298 + 10772*w^3297 + 5510*w^3296 + 28409*w^3295 + 14942*w^3294 + 833*w^3293 + 17329*w^3292 + 4596*w^3291 + 34319*w^3290 + 976*w^3289 + 37829*w^3288 + 11410*w^3287 + 15446*w^3286 + 37163*w^3285 + 3032*w^3284 + 29140*w^3283 + 40263*w^3282 + 22197*w^3281 + 36929*w^3280 + 17750*w^3279 + 20609*w^3278 + 1130*w^3277 + 6397*w^3276 + 37305*w^3275 + 15501*w^3274 + 13797*w^3273 + 29621*w^3272 + 38939*w^3271 + 24885*w^3270 + 16285*w^3269 + 2216*w^3268 + 20826*w^3267 + 37850*w^3266 + 27922*w^3265 + 28046*w^3264 + 7020*w^3263 + 27117*w^3262 + 25138*w^3261 + 15070*w^3260 + 37860*w^3259 + 3450*w^3258 + 2236*w^3257 + 25514*w^3256 + 529*w^3255 + 28710*w^3254 + 28685*w^3253 + 32760*w^3252 + 39093*w^3251 + 30023*w^3250 + 3000*w^3249 + 10490*w^3248 + 7169*w^3247 + 36076*w^3246 + 33513*w^3245 + 34052*w^3244 + 7075*w^3243 + 35922*w^3242 + 6908*w^3241 + 39347*w^3240 + 19736*w^3239 + 40458*w^3238 + 5471*w^3237 + 26385*w^3236 + 12255*w^3235 + 25237*w^3234 + 34492*w^3233 + 20647*w^3232 + 8164*w^3231 + 8463*w^3230 + 22862*w^3229 + 11492*w^3228 + 12770*w^3227 + 38106*w^3226 + 39450*w^3225 + 27155*w^3224 + 1757*w^3223 + 36027*w^3222 + 6762*w^3221 + 7329*w^3220 + 143*w^3219 + 18250*w^3218 + 3248*w^3217 + 21368*w^3216 + 36919*w^3215 + 25348*w^3214 + 27526*w^3213 + 15780*w^3212 + 24094*w^3211 + 1514*w^3210 + 31507*w^3209 + 27188*w^3208 + 26598*w^3207 + 1251*w^3206 + 19464*w^3205 + 11050*w^3204 + 27486*w^3203 + 36242*w^3202 + 39480*w^3201 + 14652*w^3200 + 13104*w^3199 + 34202*w^3198 + 961*w^3197 + 5596*w^3196 + 35203*w^3195 + 34440*w^3194 + 38271*w^3193 + 37007*w^3192 + 38971*w^3191 + 10588*w^3190 + 8312*w^3189 + 13373*w^3188 + 7322*w^3187 + 19828*w^3186 + 35510*w^3185 + 38940*w^3184 + 29594*w^3183 + 19273*w^3182 + 35669*w^3181 + 10348*w^3180 + 12687*w^3179 + 28602*w^3178 + 35913*w^3177 + 29306*w^3176 + 3942*w^3175 + 26664*w^3174 + 24610*w^3173 + 873*w^3172 + 4210*w^3171 + 31448*w^3170 + 1351*w^3169 + 11617*w^3168 + 4389*w^3167 + 28120*w^3166 + 31387*w^3165 + 28832*w^3164 + 7580*w^3163 + 14787*w^3162 + 21661*w^3161 + 22083*w^3160 + 30316*w^3159 + 28381*w^3158 + 31899*w^3157 + 21153*w^3156 + 18776*w^3155 + 4516*w^3154 + 17592*w^3153 + 38963*w^3152 + 13185*w^3151 + 3779*w^3150 + 14340*w^3149 + 13359*w^3148 + 25612*w^3147 + 21975*w^3146 + 18562*w^3145 + 22066*w^3144 + 4856*w^3143 + 283*w^3142 + 23714*w^3141 + 5957*w^3140 + 12449*w^3139 + 1146*w^3138 + 29633*w^3137 + 38570*w^3136 + 32247*w^3135 + 23362*w^3134 + 16558*w^3133 + 8508*w^3132 + 1234*w^3131 + 6766*w^3130 + 33509*w^3129 + 14448*w^3128 + 19718*w^3127 + 7783*w^3126 + 24352*w^3125 + 7648*w^3124 + 17503*w^3123 + 5878*w^3122 + 28674*w^3121 + 5896*w^3120 + 38595*w^3119 + 37579*w^3118 + 13536*w^3117 + 27953*w^3116 + 9565*w^3115 + 14156*w^3114 + 40293*w^3113 + 994*w^3112 + 28525*w^3111 + 40084*w^3110 + 16544*w^3109 + 21077*w^3108 + 28863*w^3107 + 512*w^3106 + 21904*w^3105 + 18025*w^3104 + 36969*w^3103 + 3804*w^3102 + 5168*w^3101 + 37558*w^3100 + 35056*w^3099 + 16080*w^3098 + 16709*w^3097 + 18710*w^3096 + 25120*w^3095 + 38339*w^3094 + 24594*w^3093 + 27126*w^3092 + 33016*w^3091 + 32817*w^3090 + 27074*w^3089 + 34272*w^3088 + 19749*w^3087 + 19417*w^3086 + 32223*w^3085 + 3995*w^3084 + 19788*w^3083 + 34183*w^3082 + 11582*w^3081 + 20587*w^3080 + 28032*w^3079 + 19776*w^3078 + 37287*w^3077 + 20013*w^3076 + 7400*w^3075 + 38008*w^3074 + 39019*w^3073 + 4721*w^3072 + 39343*w^3071 + 3734*w^3070 + 18579*w^3069 + 20547*w^3068 + 14825*w^3067 + 19466*w^3066 + 9156*w^3065 + 15097*w^3064 + 6371*w^3063 + 22479*w^3062 + 28314*w^3061 + 1520*w^3060 + 18971*w^3059 + 16135*w^3058 + 19648*w^3057 + 35859*w^3056 + 8009*w^3055 + 22850*w^3054 + 39398*w^3053 + 9086*w^3052 + 8703*w^3051 + 17412*w^3050 + 6580*w^3049 + 4083*w^3048 + 18767*w^3047 + 31423*w^3046 + 26348*w^3045 + 15504*w^3044 + 180*w^3043 + 12549*w^3042 + 11374*w^3041 + 1989*w^3040 + 39516*w^3039 + 24078*w^3038 + 12594*w^3037 + 16357*w^3036 + 13541*w^3035 + 34590*w^3034 + 9625*w^3033 + 199*w^3032 + 23185*w^3031 + 38423*w^3030 + 34652*w^3029 + 33875*w^3028 + 37769*w^3027 + 14505*w^3026 + 15242*w^3025 + 33151*w^3024 + 37718*w^3023 + 3794

4*w^3022 + 9396*w^3021 + 30796*w^3020 + 5458*w^3019 + 25764*w^3018 + 8788*w^3017 + 784*w^3016 + 6655*w^3015 + 4545*w^3014 + 16545*w^3013 + 14334*w^3012 + 22038*w^3011 + 14047*w^3010 + 21131*w^3009 + 33472*w^3008 + 11855*w^3007 + 8042*w^3006 + 21513*w^3005 + 8946*w^3004 + 12072*w^3003 + 25496*w^3002 + 35785*w^3001 + 17958*w^3000 + 17375*w^2999 + 16257*w^2998 + 18159*w^2997 + 29443*w^2996 + 39282*w^2995 + 1406*w^2994 + 21562*w^2993 + 5905*w^2992 + 23597*w^2991 + 16167*w^2990 + 13197*w^2989 + 3322*w^2988 + 38981*w^2987 + 40409*w^2986 + 22632*w^2985 + 17335*w^2984 + 18691*w^2983 + 14249*w^2982 + 7321*w^2981 + 311*w^2980 + 20453*w^2979 + 6345*w^2978 + 12166*w^2977 + 23094*w^2976 + 15966*w^2975 + 18509*w^2974 + 14712*w^2973 + 6199*w^2972 + 3083*w^2971 + 2119*w^2970 + 26297*w^2969 + 32984*w^2968 + 19654*w^2967 + 10666*w^2966 + 28397*w^2965 + 35625*w^2964 + 26830*w^2963 + 1418*w^2962 + 27673*w^2961 + 31945*w^2960 + 29151*w^2959 + 10159*w^2958 + 29693*w^2957 + 7039*w^2956 + 12760*w^2955 + 15793*w^2954 + 9774*w^2953 + 14013*w^2952 + 37519*w^2951 + 39270*w^2950 + 23926*w^2949 + 14994*w^2948 + 14616*w^2947 + 24069*w^2946 + 33446*w^2945 + 6496*w^2944 + 1555*w^2943 + 9107*w^2942 + 12821*w^2941 + 30888*w^2940 + 38509*w^2939 + 1433*w^2938 + 16744*w^2937 + 36824*w^2936 + 6359*w^2935 + 21704*w^2934 + 18236*w^2933 + 32913*w^2932 + 5773*w^2931 + 6412*w^2930 + 21417*w^2929 + 18250*w^2928 + 8519*w^2927 + 29712*w^2926 + 6232*w^2925 + 6413*w^2924 + 1127*w^2923 + 8058*w^2922 + 24982*w^2921 + 10185*w^2920 + 16629*w^2919 + 25792*w^2918 + 789*w^2917 + 35968*w^2916 + 31812*w^2915 + 15398*w^2914 + 14704*w^2913 + 7969*w^2912 + 34129*w^2911 + 26501*w^2910 + 21700*w^2909 + 20958*w^2908 + 6867*w^2907 + 17221*w^2906 + 1811*w^2905 + 30207*w^2904 + 20743*w^2903 + 28188*w^2902 + 38629*w^2901 + 21761*w^2900 + 29395*w^2899 + 29267*w^2898 + 27594*w^2897 + 31718*w^2896 + 3844*w^2895 + 16253*w^2894 + 487*w^2893 + 40077*w^2892 + 7585*w^2891 + 17273*w^2890 + 24245*w^2889 + 36669*w^2888 + 17679*w^2887 + 17571*w^2886 + 26899*w^2885 + 40252*w^2884 + 16063*w^2883 + 7604*w^2882 + 4176*w^2881 + 39917*w^2880 + 6428*w^2879 + 19757*w^2878 + 37500*w^2877 + 8169*w^2876 + 34952*w^2875 + 15859*w^2874 + 19578*w^2873 + 4823*w^2872 + 8769*w^2871 + 28325*w^2870 + 32428*w^2869 + 32854*w^2868 + 29723*w^2867 + 27643*w^2866 + 6183*w^2865 + 19561*w^2864 + 14753*w^2863 + 28013*w^2862 + 8090*w^2861 + 8913*w^2860 + 32412*w^2859 + 15989*w^2858 + 14058*w^2857 + 33437*w^2856 + 33629*w^2855 + 40355*w^2854 + 38152*w^2853 + 32551*w^2852 + 24298*w^2851 + 37849*w^2850 + 32363*w^2849 + 29750*w^2848 + 25198*w^2847 + 23785*w^2846 + 25858*w^2845 + 11094*w^2844 + 37791*w^2843 + 8143*w^2842 + 33618*w^2841 + 6851*w^2840 + 35915*w^2839 + 866*w^2838 + 779*w^2837 + 10937*w^2836 + 11107*w^2835 + 6065*w^2834 + 20237*w^2833 + 1499*w^2832 + 21232*w^2831 + 14128*w^2830 + 21087*w^2829 + 18526*w^2828 + 8524*w^2827 + 2477*w^2826 + 3463*w^2825 + 25370*w^2824 + 23671*w^2823 + 9354*w^2822 + 38386*w^2821 + 22006*w^2820 + 5029*w^2819 + 5805*w^2818 + 9169*w^2817 + 36840*w^2816 + 33641*w^2815 + 13204*w^2814 + 32109*w^2813 + 21722*w^2812 + 15559*w^2811 + 12042*w^2810 + 1736*w^2809 + 24529*w^2808 + 11898*w^2807 + 34786*w^2806 + 35614*w^2805 + 28823*w^2804 + 33144*w^2803 + 25075*w^2802 + 33263*w^2801 + 31965*w^2800 + 6064*w^2799 + 15203*w^2798 + 39320*w^2797 + 16782*w^2796 + 32169*w^2795 + 33274*w^2794 + 19823*w^2793 + 9795*w^2792 + 10934*w^2791 + 20142*w^2790 + 19128*w^2789 + 5368*w^2788 + 16175*w^2787 + 8302*w^2786 + 12948*w^2785 + 23968*w^2784 + 8078*w^2783 + 8148*w^2782 + 23136*w^2781 + 7060*w^2780 + 20608*w^2779 + 7583*w^2778 + 30138*w^2777 + 1350*w^2776 + 19761*w^2775 + 6563*w^2774 + 37645*w^2773 + 3806*w^2772 + 13221*w^2771 + 24251*w^2770 + 13167*w^2769 + 31957*w^2768 + 20943*w^2767 + 24128*w^2766 + 10971*w^2765 + 26015*w^2764 + 17777*w^2763 + 37769*w^2762 + 7358*w^2761 + 11186*w^2760 + 2619*w^2759 + 8843*w^2758 + 34295*w^2757 + 9071*w^2756 + 31172*w^2755 + 1450*w^2754 + 38552*w^2753 + 33826*w^2752 + 24352*w^2751 + 11447*w^2750 + 8292*w^2749 + 28297*w^2748 + 14645*w^2747 + 1970*w^2746 + 14539*w^2745 + 40599*w^2744 + 33541*w^2743 + 23493*w^2742 + 5773*w^2741 + 32005*w^2740 + 13598*w^2739 + 7084*w^2738 + 26031*w^2737 + 10940*w^2736 + 12211*w^2735 + 10890*w^2734 + 37093*w^2733 + 38661*w^2732 + 11319*w^2731 + 17814*w^2730 + 29590*w^2729 + 14399*w^2728 + 21912*w^2727 + 9752*w^2726 + 24984*w^2725 + 19482*w^2724 + 13550*w^2723 + 39385*w^2722 + 8863*w^2721 + 30339*w^2720 + 32401*w^2719 + 39484*w^2718 + 35580*w^2717 + 32641*w^2716 + 19794*w^2715 + 30530*w^2714 + 12152*w^2713 + 12660*w^2712 + 27500*w^2711 + 2878*w^2710 + 16731*w^2709 + 20202*w^2708 + 6876*w^2707 + 6600*w^2706 + 16978*w^2705 + 35363*w^2704 + 2764*w^2703 + 13241*w^2702 + 21729*w^2701 + 32388*w^2700 + 27555*w^2699 + 39554*w^2698 + 1680*w^2697 + 30533*w^2696 + 21149*w^2695 + 26604*w^2694 + 9209*w^2693 + 10580*w^2692 + 33287*w^2691 + 12770*w^2690 + 4780*w^2689 + 40169*w^2688 + 5668*w^2687 + 13923*w^2686 + 19362*w^2685 + 35455*w^2684 + 24917*w^2683 + 22918*w^2682 + 34450*w^2681 + 11526*w^2680 + 18161*w^2679 + 30979*w^2678 + 13927*w^2677 + 12963*w^2676 + 30455*w^2675 + 4454*w^2674 + 16875*w^2673 + 39969*w^2672 + 20423*w^2671 + 1693*w^2670 + 25443*w^2669 + 5713*w^2668 + 13931*w^2667 + 26510*w^2666 + 2892*w^2665 + 28708*w^2664

4 + 19364*w^2663 + 29603*w^2662 + 3732*w^2661 + 6236*w^2660 + 7309*w^2659 + 35460*w^2658 + 29197*w^2657 + 16184*w^2656 + 28786*w^2655 + 36469*w^2654 + 26929*w^2653 + 10627*w^2652 + 39547*w^2651 + 31634*w^2650 + 2707*w^2649 + 34536*w^2648 + 27688*w^2647 + 35422*w^2646 + 23847*w^2645 + 16300*w^2644 + 15633*w^2643 + 15090*w^2642 + 21244*w^2641 + 7562*w^2640 + 4095*w^2639 + 11439*w^2638 + 6162*w^2637 + 14738*w^2636 + 3343*w^2635 + 12*w^2634 + 20429*w^2633 + 35208*w^2632 + 6458*w^2631 + 3543*w^2630 + 36740*w^2629 + 32399*w^2628 + 23740*w^2627 + 17762*w^2626 + 12541*w^2625 + 26513*w^2624 + 13536*w^2623 + 16372*w^2622 + 23251*w^2621 + 13513*w^2620 + 13238*w^2619 + 35058*w^2618 + 13778*w^2617 + 15433*w^2616 + 11951*w^2615 + 8775*w^2614 + 3922*w^2613 + 17932*w^2612 + 12188*w^2611 + 25437*w^2610 + 14094*w^2609 + 32992*w^2608 + 23922*w^2607 + 816*w^2606 + 35740*w^2605 + 27946*w^2604 + 32503*w^2603 + 38671*w^2602 + 1499*w^2601 + 8698*w^2600 + 37859*w^2599 + 13822*w^2598 + 16687*w^2597 + 39899*w^2596 + 32627*w^2595 + 18878*w^2594 + 7928*w^2593 + 12219*w^2592 + 14939*w^2591 + 28401*w^2590 + 37736*w^2589 + 18242*w^2588 + 4309*w^2587 + 17694*w^2586 + 39533*w^2585 + 26364*w^2584 + 5557*w^2583 + 19321*w^2582 + 12055*w^2581 + 5268*w^2580 + 6839*w^2579 + 3288*w^2578 + 31964*w^2577 + 32701*w^2576 + 7005*w^2575 + 17043*w^2574 + 25970*w^2573 + 7231*w^2572 + 14148*w^2571 + 25095*w^2570 + 27125*w^2569 + 36535*w^2568 + 2890*w^2567 + 25469*w^2566 + 22730*w^2565 + 7740*w^2564 + 36012*w^2563 + 24026*w^2562 + 38973*w^2561 + 21719*w^2560 + 2730*w^2559 + 6487*w^2558 + 12374*w^2557 + 5094*w^2556 + 31086*w^2555 + 8731*w^2554 + 11347*w^2553 + 3483*w^2552 + 14214*w^2551 + 12316*w^2550 + 20129*w^2549 + 31786*w^2548 + 12697*w^2547 + 22345*w^2546 + 24147*w^2545 + 2081*w^2544 + 3382*w^2543 + 2286*w^2542 + 23134*w^2541 + 33312*w^2540 + 36407*w^2539 + 9993*w^2538 + 17068*w^2537 + 2073*w^2536 + 19067*w^2535 + 20589*w^2534 + 22929*w^2533 + 1169*w^2532 + 33929*w^2531 + 29758*w^2530 + 22714*w^2529 + 28165*w^2528 + 15602*w^2527 + 17337*w^2526 + 11953*w^2525 + 22710*w^2524 + 30959*w^2523 + 35996*w^2522 + 40517*w^2521 + 1071*w^2520 + 5813*w^2519 + 5855*w^2518 + 8818*w^2517 + 30366*w^2516 + 28890*w^2515 + 9518*w^2514 + 35577*w^2513 + 9903*w^2512 + 19543*w^2511 + 26281*w^2510 + 37078*w^2509 + 29004*w^2508 + 2232*w^2507 + 20239*w^2506 + 31908*w^2505 + 15804*w^2504 + 23123*w^2503 + 35765*w^2502 + 21291*w^2501 + 34532*w^2500 + 20736*w^2499 + 6037*w^2498 + 28626*w^2497 + 22458*w^2496 + 25259*w^2495 + 32789*w^2494 + 25848*w^2493 + 19806*w^2492 + 23247*w^2491 + 27544*w^2490 + 39805*w^2489 + 6200*w^2488 + 2765*w^2487 + 32919*w^2486 + 3599*w^2485 + 27240*w^2484 + 39557*w^2483 + 27452*w^2482 + 40606*w^2481 + 36538*w^2480 + 14904*w^2479 + 36111*w^2478 + 16526*w^2477 + 29773*w^2476 + 15690*w^2475 + 1857*w^2474 + 32726*w^2473 + 19312*w^2472 + 337*w^2471 + 15168*w^2470 + 19565*w^2469 + 32658*w^2468 + 1964*w^2467 + 8338*w^2466 + 17929*w^2465 + 14217*w^2464 + 34654*w^2463 + 3252*w^2462 + 3159*w^2461 + 19966*w^2460 + 6145*w^2459 + 33713*w^2458 + 976*w^2457 + 8959*w^2456 + 21712*w^2455 + 14132*w^2454 + 37048*w^2453 + 35520*w^2452 + 10077*w^2451 + 35544*w^2450 + 1209*w^2449 + 11985*w^2448 + 33593*w^2447 + 31052*w^2446 + 20198*w^2445 + 32151*w^2444 + 6567*w^2443 + 3851*w^2442 + 17845*w^2441 + 4576*w^2440 + 6463*w^2439 + 37809*w^2438 + 16695*w^2437 + 33442*w^2436 + 941*w^2435 + 29631*w^2434 + 38649*w^2433 + 13643*w^2432 + 30220*w^2431 + 30591*w^2430 + 13117*w^2429 + 4959*w^2428 + 9065*w^2427 + 10620*w^2426 + 24891*w^2425 + 17327*w^2424 + 37010*w^2423 + 40808*w^2422 + 40196*w^2421 + 10839*w^2420 + 3735*w^2419 + 13829*w^2418 + 25481*w^2417 + 11755*w^2416 + 25806*w^2415 + 20612*w^2414 + 39726*w^2413 + 17629*w^2412 + 23904*w^2411 + 23681*w^2410 + 22705*w^2409 + 37845*w^2408 + 36430*w^2407 + 20660*w^2406 + 3017*w^2405 + 37126*w^2404 + 6802*w^2403 + 35778*w^2402 + 30946*w^2401 + 16865*w^2400 + 27411*w^2399 + 34874*w^2398 + 29344*w^2397 + 40129*w^2396 + 36915*w^2395 + 5861*w^2394 + 33853*w^2393 + 10283*w^2392 + 18707*w^2391 + 13215*w^2390 + 7853*w^2389 + 24687*w^2388 + 23472*w^2387 + 10285*w^2386 + 12711*w^2385 + 27880*w^2384 + 3672*w^2383 + 24734*w^2382 + 12407*w^2381 + 18450*w^2380 + 22722*w^2379 + 18518*w^2378 + 32586*w^2377 + 1836*w^2376 + 1033*w^2375 + 16201*w^2374 + 40391*w^2373 + 39149*w^2372 + 30333*w^2371 + 39756*w^2370 + 11955*w^2369 + 12318*w^2368 + 8428*w^2367 + 4077*w^2366 + 35099*w^2365 + 2434*w^2364 + 32585*w^2363 + 16544*w^2362 + 27858*w^2361 + 274*w^2360 + 9396*w^2359 + 40852*w^2358 + 29993*w^2357 + 16593*w^2356 + 31138*w^2355 + 20453*w^2354 + 8720*w^2353 + 7826*w^2352 + 17715*w^2351 + 33598*w^2350 + 12246*w^2349 + 31600*w^2348 + 25029*w^2347 + 7481*w^2346 + 2733*w^2345 + 18819*w^2344 + 9283*w^2343 + 4274*w^2342 + 7701*w^2341 + 6760*w^2340 + 9291*w^2339 + 24677*w^2338 + 27085*w^2337 + 5817*w^2336 + 19680*w^2335 + 22049*w^2334 + 37890*w^2333 + 12809*w^2332 + 31221*w^2331 + 27535*w^2330 + 14383*w^2329 + 21473*w^2328 + 27073*w^2327 + 364*w^2326 + 37387*w^2325 + 2276*w^2324 + 22903*w^2323 + 12479*w^2322 + 20675*w^2321 + 22487*w^2320 + 2918*w^2319 + 19865*w^2318 + 3340*w^2317 + 713*w^2316 + 29198*w^2315 + 21878*w^2314 + 35520*w^2313 + 19347*w^2312 + 3010*w^2311 + 8468*w^2310 + 36937*w^2309 + 32773*w^2308 + 28860*w^2307 + 36323*w^2306 + 22543

*w^2305 + 27241*w^2304 + 6513*w^2303 + 1891*w^2302 + 5206*w^2301 + 13875*w^2300 + 18235*w^2299 + 29662*w^2298 + 19740*w^2297 + 23305*w^2296 + 19579*w^2295 + 36994*w^2294 + 35704*w^2293 + 1297*w^2292 + 40464*w^2291 + 21863*w^2290 + 31654*w^2289 + 4494*w^2288 + 12358*w^2287 + 40009*w^2286 + 39670*w^2285 + 39842*w^2284 + 14908*w^2283 + 20688*w^2282 + 616*w^2281 + 30847*w^2280 + 5825*w^2279 + 25497*w^2278 + 2930*w^2277 + 15748*w^2276 + 22476*w^2275 + 14437*w^2274 + 10495*w^2273 + 8879*w^2272 + 26380*w^2271 + 3970*w^2270 + 26725*w^2269 + 16334*w^2268 + 34256*w^2267 + 7625*w^2266 + 16899*w^2265 + 18007*w^2264 + 5808*w^2263 + 4561*w^2262 + 26830*w^2261 + 10288*w^2260 + 15925*w^2259 + 35170*w^2258 + 252*w^2257 + 21273*w^2256 + 3004*w^2255 + 20940*w^2254 + 36011*w^2253 + 40896*w^2252 + 37076*w^2251 + 17284*w^2250 + 3926*w^2249 + 20955*w^2248 + 29692*w^2247 + 39741*w^2246 + 30334*w^2245 + 11251*w^2244 + 27949*w^2243 + 17681*w^2242 + 3716*w^2241 + 26437*w^2240 + 34400*w^2239 + 6924*w^2238 + 36665*w^2237 + 29287*w^2236 + 30899*w^2235 + 12661*w^2234 + 19293*w^2233 + 13841*w^2232 + 13648*w^2231 + 33754*w^2230 + 38544*w^2229 + 20366*w^2228 + 19789*w^2227 + 19564*w^2226 + 11847*w^2225 + 33422*w^2224 + 22320*w^2223 + 36654*w^2222 + 29061*w^2221 + 6770*w^2220 + 25672*w^2219 + 21087*w^2218 + 28068*w^2217 + 33972*w^2216 + 14346*w^2215 + 32461*w^2214 + 15627*w^2213 + 13521*w^2212 + 29091*w^2211 + 11585*w^2210 + 24496*w^2209 + 9901*w^2208 + 5752*w^2207 + 3450*w^2206 + 9088*w^2205 + 36158*w^2204 + 32920*w^2203 + 4947*w^2202 + 16372*w^2201 + 9857*w^2200 + 23487*w^2199 + 6166*w^2198 + 11586*w^2197 + 36876*w^2196 + 22661*w^2195 + 23284*w^2194 + 28804*w^2193 + 24952*w^2192 + 36517*w^2191 + 32930*w^2190 + 11461*w^2189 + 40853*w^2188 + 25216*w^2187 + 34419*w^2186 + 33666*w^2185 + 26162*w^2184 + 5849*w^2183 + 3599*w^2182 + 2850*w^2181 + 37715*w^2180 + 37356*w^2179 + 78*w^2178 + 1397*w^2177 + 27566*w^2176 + 30625*w^2175 + 15551*w^2174 + 12973*w^2173 + 18798*w^2172 + 36773*w^2171 + 18252*w^2170 + 24345*w^2169 + 4575*w^2168 + 5918*w^2167 + 31496*w^2166 + 3246*w^2165 + 38778*w^2164 + 31286*w^2163 + 7426*w^2162 + 31859*w^2161 + 9605*w^2160 + 20537*w^2159 + 1142*w^2158 + 38124*w^2157 + 30402*w^2156 + 14484*w^2155 + 2224*w^2154 + 25619*w^2153 + 39786*w^2152 + 4309*w^2151 + 15285*w^2150 + 16686*w^2149 + 17077*w^2148 + 19946*w^2147 + 20280*w^2146 + 30514*w^2145 + 25411*w^2144 + 6994*w^2143 + 8180*w^2142 + 18676*w^2141 + 23600*w^2140 + 26754*w^2139 + 11019*w^2138 + 23543*w^2137 + 26127*w^2136 + 26489*w^2135 + 12692*w^2134 + 16963*w^2133 + 28261*w^2132 + 24761*w^2131 + 17111*w^2130 + 19992*w^2129 + 37214*w^2128 + 19997*w^2127 + 3681*w^2126 + 32883*w^2125 + 28966*w^2124 + 39191*w^2123 + 10225*w^2122 + 32641*w^2121 + 36103*w^2120 + 5446*w^2119 + 21279*w^2118 + 11605*w^2117 + 6576*w^2116 + 5673*w^2115 + 20042*w^2114 + 40722*w^2113 + 2600*w^2112 + 6914*w^2111 + 29083*w^2110 + 23266*w^2109 + 28115*w^2108 + 6607*w^2107 + 25726*w^2106 + 5027*w^2105 + 12711*w^2104 + 19640*w^2103 + 9042*w^2102 + 29197*w^2101 + 22730*w^2100 + 12237*w^2099 + 7887*w^2098 + 36032*w^2097 + 19992*w^2096 + 36059*w^2095 + 38478*w^2094 + 23123*w^2093 + 13666*w^2092 + 36652*w^2091 + 3067*w^2090 + 13949*w^2089 + 9532*w^2088 + 20851*w^2087 + 19540*w^2086 + 13178*w^2085 + 17807*w^2084 + 14582*w^2083 + 5857*w^2082 + 37062*w^2081 + 6253*w^2080 + 35169*w^2079 + 4895*w^2078 + 4015*w^2077 + 13533*w^2076 + 4701*w^2075 + 26595*w^2074 + 2906*w^2073 + 37485*w^2072 + 25355*w^2071 + 14364*w^2070 + 12016*w^2069 + 33312*w^2068 + 13764*w^2067 + 30563*w^2066 + 22859*w^2065 + 313*w^2064 + 20481*w^2063 + 11844*w^2062 + 8592*w^2061 + 12497*w^2060 + 22161*w^2059 + 3391*w^2058 + 11829*w^2057 + 3213*w^2056 + 14151*w^2055 + 30580*w^2054 + 28867*w^2053 + 33089*w^2052 + 3276*w^2051 + 10616*w^2050 + 6944*w^2049 + 17082*w^2048 + 2708*w^2047 + 37526*w^2046 + 24561*w^2045 + 9181*w^2044 + 3994*w^2043 + 14810*w^2042 + 21749*w^2041 + 15078*w^2040 + 4835*w^2039 + 11346*w^2038 + 17274*w^2037 + 30321*w^2036 + 31940*w^2035 + 1520*w^2034 + 5923*w^2033 + 26752*w^2032 + 29842*w^2031 + 18283*w^2030 + 5404*w^2029 + 9762*w^2028 + 9833*w^2027 + 32783*w^2026 + 29344*w^2025 + 8104*w^2024 + 10723*w^2023 + 10082*w^2022 + 2889*w^2021 + 17514*w^2020 + 34172*w^2019 + 9862*w^2018 + 2657*w^2017 + 21660*w^2016 + 19507*w^2015 + 19353*w^2014 + 25181*w^2013 + 6655*w^2012 + 37368*w^2011 + 36495*w^2010 + 9335*w^2009 + 16701*w^2008 + 16094*w^2007 + 7025*w^2006 + 17463*w^2005 + 37398*w^2004 + 30847*w^2003 + 20528*w^2002 + 32270*w^2001 + 28799*w^2000 + 23437*w^1999 + 29867*w^1998 + 20705*w^1997 + 27505*w^1996 + 22516*w^1995 + 30150*w^1994 + 9980*w^1993 + 34717*w^1992 + 32301*w^1991 + 9224*w^1990 + 28912*w^1989 + 16669*w^1988 + 25365*w^1987 + 25646*w^1986 + 21334*w^1985 + 6043*w^1984 + 1939*w^1983 + 37477*w^1982 + 15382*w^1981 + 33023*w^1980 + 39883*w^1979 + 26817*w^1978 + 17633*w^1977 + 20381*w^1976 + 19933*w^1975 + 26018*w^1974 + 14783*w^1973 + 38360*w^1972 + 35726*w^1971 + 39945*w^1970 + 36245*w^1969 + 2872*w^1968 + 1182*w^1967 + 7859*w^1966 + 11840*w^1965 + 17335*w^1964 + 25141*w^1963 + 9054*w^1962 + 24716*w^1961 + 34926*w^1960 + 8218*w^1959 + 22563*w^1958 + 11837*w^1957 + 12574*w^1956 + 35509*w^1955 + 25351*w^1954 + 2442*w^1953 + 6*w^1952 + 7899*w^1951 + 17896*w^1950 + 13230*w^1949 + 1722*w^1948 + 3876*w^1947

7 + 40122*w^1946 + 5695*w^1945 + 35687*w^1944 + 27593*w^1943 + 26245*w^1942 + 32852*w^1941 + 39530*w^1940 + 11855*w^1939 + 30969*w^1938 + 38021*w^1937 + 15104*w^1936 + 38401*w^1935 + 28172*w^1934 + 22594*w^1933 + 17172*w^1932 + 24751*w^1931 + 33828*w^1930 + 7523*w^1929 + 38607*w^1928 + 22662*w^1927 + 20238*w^1926 + 39072*w^1925 + 23887*w^1924 + 24042*w^1923 + 10962*w^1922 + 4056*w^1921 + 37272*w^1920 + 5637*w^1919 + 28922*w^1918 + 100*w^1917 + 25170*w^1916 + 31744*w^1915 + 34957*w^1914 + 22871*w^1913 + 17045*w^1912 + 36555*w^1911 + 29689*w^1910 + 26977*w^1909 + 8084*w^1908 + 15398*w^1907 + 14705*w^1906 + 40734*w^1905 + 17101*w^1904 + 6941*w^1903 + 34927*w^1902 + 32553*w^1901 + 8790*w^1900 + 17496*w^1899 + 643*w^1898 + 3514*w^1897 + 12455*w^1896 + 25728*w^1895 + 13817*w^1894 + 9215*w^1893 + 2553*w^1892 + 6583*w^1891 + 30696*w^1890 + 8588*w^1889 + 18336*w^1888 + 40468*w^1887 + 29674*w^1886 + 32822*w^1885 + 35280*w^1884 + 11596*w^1883 + 30765*w^1882 + 12830*w^1881 + 7309*w^1880 + 9771*w^1879 + 23081*w^1878 + 3631*w^1877 + 32674*w^1876 + 16503*w^1875 + 7599*w^1874 + 25633*w^1873 + 30426*w^1872 + 7136*w^1871 + 23535*w^1870 + 5121*w^1869 + 25107*w^1868 + 14475*w^1867 + 24825*w^1866 + 28318*w^1865 + 21034*w^1864 + 31660*w^1863 + 3658*w^1862 + 37164*w^1861 + 6898*w^1860 + 38061*w^1859 + 37348*w^1858 + 15635*w^1857 + 37061*w^1856 + 13907*w^1855 + 38139*w^1854 + 22182*w^1853 + 39923*w^1852 + 23956*w^1851 + 37708*w^1850 + 13384*w^1849 + 15196*w^1848 + 24323*w^1847 + 19145*w^1846 + 28314*w^1845 + 34635*w^1844 + 9982*w^1843 + 13455*w^1842 + 3264*w^1841 + 10496*w^1840 + 22922*w^1839 + 38348*w^1838 + 23586*w^1837 + 35733*w^1836 + 23356*w^1835 + 11108*w^1834 + 10192*w^1833 + 23840*w^1832 + 16816*w^1831 + 29720*w^1830 + 31507*w^1829 + 13018*w^1828 + 32629*w^1827 + 27292*w^1826 + 4171*w^1825 + 15969*w^1824 + 24070*w^1823 + 15786*w^1822 + 29209*w^1821 + 33361*w^1820 + 33692*w^1819 + 10591*w^1818 + 5189*w^1817 + 29719*w^1816 + 40106*w^1815 + 40872*w^1814 + 15271*w^1813 + 2012*w^1812 + 31846*w^1811 + 21974*w^1810 + 25557*w^1809 + 30189*w^1808 + 37586*w^1807 + 8813*w^1806 + 40805*w^1805 + 38620*w^1804 + 7806*w^1803 + 9830*w^1802 + 16227*w^1801 + 26673*w^1800 + 27427*w^1799 + 13281*w^1798 + 40498*w^1797 + 23608*w^1796 + 32766*w^1795 + 27465*w^1794 + 18099*w^1793 + 26802*w^1792 + 31160*w^1791 + 7114*w^1790 + 35156*w^1789 + 993*w^1788 + 38513*w^1787 + 1103*w^1786 + 27659*w^1785 + 20955*w^1784 + 18867*w^1783 + 34513*w^1782 + 8206*w^1781 + 26083*w^1780 + 36533*w^1779 + 23649*w^1778 + 9575*w^1777 + 10484*w^1776 + 162*w^1775 + 33764*w^1774 + 878*w^1773 + 20718*w^1772 + 20615*w^1771 + 37207*w^1770 + 21331*w^1769 + 29233*w^1768 + 1500*w^1767 + 16982*w^1766 + 155*w^1765 + 38262*w^1764 + 19962*w^1763 + 20435*w^1762 + 38772*w^1761 + 6390*w^1760 + 499*w^1759 + 22069*w^1758 + 31615*w^1757 + 5714*w^1756 + 39338*w^1755 + 11547*w^1754 + 6386*w^1753 + 5127*w^1752 + 25146*w^1751 + 28572*w^1750 + 300*w^1749 + 1535*w^1748 + 33837*w^1747 + 12366*w^1746 + 4963*w^1745 + 5156*w^1744 + 32010*w^1743 + 4723*w^1742 + 37551*w^1741 + 10060*w^1740 + 38535*w^1739 + 21501*w^1738 + 39038*w^1737 + 29487*w^1736 + 2304*w^1735 + 10759*w^1734 + 40748*w^1733 + 18607*w^1732 + 1311*w^1731 + 32377*w^1730 + 8403*w^1729 + 17437*w^1728 + 34908*w^1727 + 24489*w^1726 + 37406*w^1725 + 33962*w^1724 + 2186*w^1723 + 31466*w^1722 + 6913*w^1721 + 20003*w^1720 + 13973*w^1719 + 24005*w^1718 + 13910*w^1717 + 19028*w^1716 + 29007*w^1715 + 2006*w^1714 + 35014*w^1713 + 29673*w^1712 + 23752*w^1711 + 17300*w^1710 + 17354*w^1709 + 8404*w^1708 + 17846*w^1707 + 24242*w^1706 + 22334*w^1705 + 30834*w^1704 + 30980*w^1703 + 36519*w^1702 + 27765*w^1701 + 30791*w^1700 + 32095*w^1699 + 37264*w^1698 + 8224*w^1697 + 29273*w^1696 + 31132*w^1695 + 11234*w^1694 + 35751*w^1693 + 1117*w^1692 + 22309*w^1691 + 36392*w^1690 + 33095*w^1689 + 35463*w^1688 + 7109*w^1687 + 8617*w^1686 + 22098*w^1685 + 3555*w^1684 + 40352*w^1683 + 28557*w^1682 + 27551*w^1681 + 26008*w^1680 + 1327*w^1679 + 2273*w^1678 + 38024*w^1677 + 27588*w^1676 + 7648*w^1675 + 8116*w^1674 + 1906*w^1673 + 4945*w^1672 + 1937*w^1671 + 11727*w^1670 + 38850*w^1669 + 26400*w^1668 + 19052*w^1667 + 12087*w^1666 + 6939*w^1665 + 37975*w^1664 + 12619*w^1663 + 6384*w^1662 + 35790*w^1661 + 16059*w^1660 + 30130*w^1659 + 4869*w^1658 + 16951*w^1657 + 11316*w^1656 + 31267*w^1655 + 34073*w^1654 + 500*w^1653 + 34451*w^1652 + 30765*w^1651 + 36983*w^1650 + 27956*w^1649 + 34436*w^1648 + 22748*w^1647 + 23242*w^1646 + 5748*w^1645 + 18712*w^1644 + 6747*w^1643 + 8112*w^1642 + 38198*w^1641 + 24766*w^1640 + 28463*w^1639 + 14997*w^1638 + 34138*w^1637 + 6095*w^1636 + 31321*w^1635 + 11995*w^1634 + 39785*w^1633 + 6001*w^1632 + 32198*w^1631 + 15451*w^1630 + 36675*w^1629 + 9413*w^1628 + 36466*w^1627 + 37915*w^1626 + 9992*w^1625 + 30717*w^1624 + 34832*w^1623 + 19660*w^1622 + 5616*w^1621 + 34225*w^1620 + 27118*w^1619 + 4531*w^1618 + 7798*w^1617 + 1529*w^1616 + 9840*w^1615 + 4182*w^1614 + 28353*w^1613 + 4527*w^1612 + 33931*w^1611 + 3597*w^1610 + 36371*w^1609 + 24570*w^1608 + 33466*w^1607 + 5436*w^1606 + 6751*w^1605 + 8379*w^1604 + 1398*w^1603 + 1854*w^1602 + 39217*w^1601 + 1207*w^1600 + 5400*w^1599 + 23678*w^1598 + 10742*w^1597 + 15053*w^1596 + 21066*w^1595 + 18371*w^1594 + 10363*w^1593 + 32455*w^1592 + 15124*w^1591 + 18818*w^1590 + 25983*w^1589 + 27570*w^1588 + 11754*w^1587 + 13609*w^1586 +

35217*w^1585 + 7030*w^1584 + 9156*w^1583 + 31913*w^1582 + 33815*w^1581 + 5236*w^1580 + 112*w^1579 + 17087*w^1578 + 28476*w^1577 + 10736*w^1576 + 11167*w^1575 + 30191*w^1574 + 36499*w^1573 + 18541*w^1572 + 5027*w^1571 + 10725*w^1570 + 26655*w^1569 + 1608*w^1568 + 30111*w^1567 + 10042*w^1566 + 10679*w^1565 + 37181*w^1564 + 10513*w^1563 + 22745*w^1562 + 30036*w^1561 + 24707*w^1560 + 32552*w^1559 + 33029*w^1558 + 4312*w^1557 + 13139*w^1556 + 4355*w^1555 + 15103*w^1554 + 40081*w^1553 + 26640*w^1552 + 39130*w^1551 + 34501*w^1550 + 1888*w^1549 + 9921*w^1548 + 11557*w^1547 + 37444*w^1546 + 19549*w^1545 + 28937*w^1544 + 34026*w^1543 + 7813*w^1542 + 9817*w^1541 + 12637*w^1540 + 13528*w^1539 + 38859*w^1538 + 11435*w^1537 + 1578*w^1536 + 34636*w^1535 + 37125*w^1534 + 15414*w^1533 + 6004*w^1532 + 36155*w^1531 + 19006*w^1530 + 35423*w^1529 + 34458*w^1528 + 21777*w^1527 + 33131*w^1526 + 14592*w^1525 + 14066*w^1524 + 1221*w^1523 + 12617*w^1522 + 8194*w^1521 + 14509*w^1520 + 6194*w^1519 + 25540*w^1518 + 31719*w^1517 + 6463*w^1516 + 36827*w^1515 + 32102*w^1514 + 13166*w^1513 + 17920*w^1512 + 35658*w^1511 + 9550*w^1510 + 9461*w^1509 + 10667*w^1508 + 35540*w^1507 + 31815*w^1506 + 12947*w^1505 + 17508*w^1504 + 33931*w^1503 + 12311*w^1502 + 20574*w^1501 + 3811*w^1500 + 5699*w^1499 + 4475*w^1498 + 2346*w^1497 + 10725*w^1496 + 34160*w^1495 + 7859*w^1494 + 12772*w^1493 + 14837*w^1492 + 18017*w^1491 + 17036*w^1490 + 8992*w^1489 + 23428*w^1488 + 6122*w^1487 + 30561*w^1486 + 10733*w^1485 + 4596*w^1484 + 4389*w^1483 + 18340*w^1482 + 6624*w^1481 + 22756*w^1480 + 37966*w^1479 + 16555*w^1478 + 23471*w^1477 + 23817*w^1476 + 35737*w^1475 + 32914*w^1474 + 35844*w^1473 + 24591*w^1472 + 7005*w^1471 + 8006*w^1470 + 5310*w^1469 + 13531*w^1468 + 5647*w^1467 + 32595*w^1466 + 6734*w^1465 + 18707*w^1464 + 20659*w^1463 + 31121*w^1462 + 10536*w^1461 + 33662*w^1460 + 1175*w^1459 + 24544*w^1458 + 38829*w^1457 + 13963*w^1456 + 29199*w^1455 + 31266*w^1454 + 25453*w^1453 + 17447*w^1452 + 35600*w^1451 + 20935*w^1450 + 20375*w^1449 + 18998*w^1448 + 16101*w^1447 + 6350*w^1446 + 1437*w^1445 + 5659*w^1444 + 17197*w^1443 + 40154*w^1442 + 32706*w^1441 + 33276*w^1440 + 39477*w^1439 + 19885*w^1438 + 13172*w^1437 + 27255*w^1436 + 12744*w^1435 + 12351*w^1434 + 6966*w^1433 + 39576*w^1432 + 20002*w^1431 + 34100*w^1430 + 10592*w^1429 + 39034*w^1428 + 6572*w^1427 + 29633*w^1426 + 33377*w^1425 + 11170*w^1424 + 11860*w^1423 + 40644*w^1422 + 23389*w^1421 + 21152*w^1420 + 28268*w^1419 + 35017*w^1418 + 4835*w^1417 + 30823*w^1416 + 5106*w^1415 + 7517*w^1414 + 39321*w^1413 + 29427*w^1412 + 25187*w^1411 + 4778*w^1410 + 16910*w^1409 + 32924*w^1408 + 6003*w^1407 + 4738*w^1406 + 9301*w^1405 + 35100*w^1404 + 32994*w^1403 + 38137*w^1402 + 13077*w^1401 + 17907*w^1400 + 10517*w^1399 + 4883*w^1398 + 29035*w^1397 + 27010*w^1396 + 6005*w^1395 + 38859*w^1394 + 23502*w^1393 + 17925*w^1392 + 5281*w^1391 + 146*w^1390 + 2475*w^1389 + 4829*w^1388 + 10204*w^1387 + 31187*w^1386 + 24515*w^1385 + 36132*w^1384 + 29513*w^1383 + 15670*w^1382 + 16288*w^1381 + 5196*w^1380 + 4209*w^1379 + 13409*w^1378 + 4990*w^1377 + 20892*w^1376 + 814*w^1375 + 32789*w^1374 + 6917*w^1373 + 2159*w^1372 + 11610*w^1371 + 19752*w^1370 + 5579*w^1369 + 8867*w^1368 + 36849*w^1367 + 17198*w^1366 + 34590*w^1365 + 33196*w^1364 + 27023*w^1363 + 2859*w^1362 + 40953*w^1361 + 8013*w^1360 + 7206*w^1359 + 29043*w^1358 + 24916*w^1357 + 2991*w^1356 + 40726*w^1355 + 5436*w^1354 + 5167*w^1353 + 19160*w^1352 + 34349*w^1351 + 1893*w^1350 + 29590*w^1349 + 38929*w^1348 + 30642*w^1347 + 25169*w^1346 + 28997*w^1345 + 5027*w^1344 + 27430*w^1343 + 1326*w^1342 + 12332*w^1341 + 6283*w^1340 + 15015*w^1339 + 11368*w^1338 + 606*w^1337 + 7370*w^1336 + 16188*w^1335 + 11818*w^1334 + 39223*w^1333 + 23774*w^1332 + 13334*w^1331 + 21837*w^1330 + 39614*w^1329 + 13610*w^1328 + 30546*w^1327 + 20765*w^1326 + 34423*w^1325 + 29475*w^1324 + 29387*w^1323 + 28628*w^1322 + 16826*w^1321 + 13291*w^1320 + 11419*w^1319 + 28677*w^1318 + 8533*w^1317 + 32047*w^1316 + 15310*w^1315 + 21679*w^1314 + 26745*w^1313 + 2665*w^1312 + 6696*w^1311 + 11813*w^1310 + 10169*w^1309 + 13510*w^1308 + 27083*w^1307 + 25941*w^1306 + 7022*w^1305 + 2273*w^1304 + 130*w^1303 + 4613*w^1302 + 27705*w^1301 + 19608*w^1300 + 12803*w^1299 + 2464*w^1298 + 7943*w^1297 + 38437*w^1296 + 4502*w^1295 + 19953*w^1294 + 31326*w^1293 + 3384*w^1292 + 32449*w^1291 + 17823*w^1290 + 4867*w^1289 + 38812*w^1288 + 9622*w^1287 + 24107*w^1286 + 5121*w^1285 + 25922*w^1284 + 2394*w^1283 + 40303*w^1282 + 32209*w^1281 + 27077*w^1280 + 3536*w^1279 + 13417*w^1278 + 2919*w^1277 + 4311*w^1276 + 25444*w^1275 + 20426*w^1274 + 39430*w^1273 + 10766*w^1272 + 25697*w^1271 + 4727*w^1270 + 12967*w^1269 + 11698*w^1268 + 25578*w^1267 + 33154*w^1266 + 26991*w^1265 + 14797*w^1264 + 4136*w^1263 + 19748*w^1262 + 37237*w^1261 + 1822*w^1260 + 29690*w^1259 + 10492*w^1258 + 1536*w^1257 + 22141*w^1256 + 3520*w^1255 + 11208*w^1254 + 23218*w^1253 + 12535*w^1252 + 37755*w^1251 + 19561*w^1250 + 33566*w^1249 + 26298*w^1248 + 37798*w^1247 + 23431*w^1246 + 37158*w^1245 + 22171*w^1244 + 4333*w^1243 + 31181*w^1242 + 5281*w^1241 + 8216*w^1240 + 11006*w^1239 + 1844*w^1238 + 35773*w^1237 + 5255*w^1236 + 35204*w^1235 + 13152*w^1234 + 3552*w^1233 + 13548*w^1232 + 33808*w^1231 + 3566*w^1230 + 23376*w^1229 + 17407*w^1228 + 23103*w^1227 + 35597*w^1226 + 25873*w^1225 + 20676*w^1224 + 38095*w^1223

23 + 27114*w^1222 + 33645*w^1221 + 8948*w^1220 + 26812*w^1219 + 28609*w^1218 + 93*w^1217 + 4680*w^1216 + 28748*w^1215 + 31246*w^1214 + 12676*w^1213 + 19027*w^1212 + 24268*w^1211 + 13239*w^1210 + 8042*w^1209 + 8780*w^1208 + 10365*w^1207 + 31560*w^1206 + 14649*w^1205 + 605*w^1204 + 5076*w^1203 + 17938*w^1202 + 29396*w^1201 + 21406*w^1200 + 25735*w^1199 + 39142*w^1198 + 8704*w^1197 + 36842*w^1196 + 17966*w^1195 + 22263*w^1194 + 11327*w^1193 + 14762*w^1192 + 25993*w^1191 + 2375*w^1190 + 19431*w^1189 + 32467*w^1188 + 35085*w^1187 + 34113*w^1186 + 36803*w^1185 + 28020*w^1184 + 21233*w^1183 + 28941*w^1182 + 33631*w^1181 + 5678*w^1180 + 13163*w^1179 + 21117*w^1178 + 26849*w^1177 + 17901*w^1176 + 23605*w^1175 + 31247*w^1174 + 23346*w^1173 + 20887*w^1172 + 27762*w^1171 + 20433*w^1170 + 11670*w^1169 + 2268*w^1168 + 12185*w^1167 + 16564*w^1166 + 36722*w^1165 + 33940*w^1164 + 26310*w^1163 + 35798*w^1162 + 2050*w^1161 + 22257*w^1160 + 15090*w^1159 + 35267*w^1158 + 30714*w^1157 + 12792*w^1156 + 25314*w^1155 + 19518*w^1154 + 11776*w^1153 + 11077*w^1152 + 12767*w^1151 + 9890*w^1150 + 39619*w^1149 + 40749*w^1148 + 6392*w^1147 + 15519*w^1146 + 36089*w^1145 + 16556*w^1144 + 37782*w^1143 + 1495*w^1142 + 18810*w^1141 + 6747*w^1140 + 39571*w^1139 + 21412*w^1138 + 39372*w^1137 + 28308*w^1136 + 24358*w^1135 + 25698*w^1134 + 7709*w^1133 + 2090*w^1132 + 3225*w^1131 + 31078*w^1130 + 2639*w^1129 + 7199*w^1128 + 24666*w^1127 + 5148*w^1126 + 335*w^1125 + 29909*w^1124 + 23147*w^1123 + 33108*w^1122 + 23680*w^1121 + 15212*w^1120 + 10946*w^1119 + 26445*w^1118 + 1892*w^1117 + 10580*w^1116 + 23992*w^1115 + 37680*w^1114 + 38141*w^1113 + 22446*w^1112 + 17230*w^1111 + 28946*w^1110 + 20132*w^1109 + 29236*w^1108 + 35442*w^1107 + 11880*w^1106 + 567*w^1105 + 37020*w^1104 + 9128*w^1103 + 21415*w^1102 + 38242*w^1101 + 40810*w^1100 + 1638*w^1099 + 39931*w^1098 + 2861*w^1097 + 34208*w^1096 + 14677*w^1095 + 6672*w^1094 + 33913*w^1093 + 12174*w^1092 + 12375*w^1091 + 23775*w^1090 + 28228*w^1089 + 26131*w^1088 + 39517*w^1087 + 39697*w^1086 + 15100*w^1085 + 5889*w^1084 + 15400*w^1083 + 31927*w^1082 + 23766*w^1081 + 34102*w^1080 + 3897*w^1079 + 35144*w^1078 + 10602*w^1077 + 3037*w^1076 + 21685*w^1075 + 2778*w^1074 + 11731*w^1073 + 21069*w^1072 + 10445*w^1071 + 27927*w^1070 + 36157*w^1069 + 28451*w^1068 + 17799*w^1067 + 40127*w^1066 + 37859*w^1065 + 26954*w^1064 + 11480*w^1063 + 34249*w^1062 + 30389*w^1061 + 27355*w^1060 + 14350*w^1059 + 28542*w^1058 + 23260*w^1057 + 31790*w^1056 + 35230*w^1055 + 5779*w^1054 + 758*w^1053 + 5745*w^1052 + 2142*w^1051 + 17417*w^1050 + 4266*w^1049 + 37697*w^1048 + 36650*w^1047 + 30465*w^1046 + 27941*w^1045 + 21593*w^1044 + 31617*w^1043 + 14699*w^1042 + 37037*w^1041 + 21878*w^1040 + 34777*w^1039 + 12703*w^1038 + 24305*w^1037 + 4559*w^1036 + 11846*w^1035 + 20385*w^1034 + 13623*w^1033 + 20686*w^1032 + 31853*w^1031 + 3502*w^1030 + 16123*w^1029 + 33238*w^1028 + 27636*w^1027 + 34312*w^1026 + 34386*w^1025 + 5873*w^1024 + 7338*w^1023 + 7755*w^1022 + 19566*w^1021 + 14643*w^1020 + 1014*w^1019 + 25356*w^1018 + 27847*w^1017 + 8976*w^1016 + 18124*w^1015 + 25216*w^1014 + 36389*w^1013 + 12565*w^1012 + 37030*w^1011 + 23024*w^1010 + 8363*w^1009 + 10286*w^1008 + 34334*w^1007 + 16411*w^1006 + 13992*w^1005 + 14882*w^1004 + 5578*w^1003 + 5629*w^1002 + 32573*w^1001 + 26886*w^1000 + 14415*w^999 + 18740*w^998 + 5917*w^997 + 5932*w^996 + 5286*w^995 + 12689*w^994 + 5791*w^993 + 3579*w^992 + 4901*w^991 + 1646*w^990 + 24338*w^989 + 32971*w^988 + 32857*w^987 + 18175*w^986 + 31884*w^985 + 33059*w^984 + 23137*w^983 + 27711*w^982 + 24331*w^981 + 7645*w^980 + 19880*w^979 + 37107*w^978 + 38556*w^977 + 6810*w^976 + 1580*w^975 + 8037*w^974 + 23254*w^973 + 27740*w^972 + 40816*w^971 + 21250*w^970 + 31464*w^969 + 5175*w^968 + 32569*w^967 + 26350*w^966 + 15905*w^965 + 4581*w^964 + 2660*w^963 + 37302*w^962 + 5657*w^961 + 32593*w^960 + 19491*w^959 + 40517*w^958 + 15591*w^957 + 22358*w^956 + 15750*w^955 + 3972*w^954 + 19061*w^953 + 35720*w^952 + 16450*w^951 + 36483*w^950 + 10730*w^949 + 32517*w^948 + 15593*w^947 + 27764*w^946 + 8490*w^945 + 32807*w^944 + 30414*w^943 + 18001*w^942 + 19663*w^941 + 9105*w^940 + 2369*w^939 + 5873*w^938 + 33480*w^937 + 31109*w^936 + 1784*w^935 + 684*w^934 + 36492*w^933 + 37289*w^932 + 5432*w^931 + 471*w^930 + 12423*w^929 + 30696*w^928 + 6911*w^927 + 36840*w^926 + 1978*w^925 + 9741*w^924 + 2401*w^923 + 21444*w^922 + 19726*w^921 + 31956*w^920 + 18723*w^919 + 36693*w^918 + 19036*w^917 + 12971*w^916 + 10921*w^915 + 1570*w^914 + 11703*w^913 + 24827*w^912 + 14692*w^911 + 19260*w^910 + 480*w^909 + 36246*w^908 + 33709*w^907 + 34265*w^906 + 17562*w^905 + 6738*w^904 + 37349*w^903 + 5696*w^902 + 40053*w^901 + 36308*w^900 + 11586*w^899 + 33583*w^898 + 2150*w^897 + 29352*w^896 + 37718*w^895 + 39069*w^894 + 20436*w^893 + 35217*w^892 + 9807*w^891 + 15659*w^890 + 8122*w^889 + 3434*w^888 + 2003*w^887 + 37147*w^886 + 18049*w^885 + 25245*w^884 + 37439*w^883 + 21801*w^882 + 3045*w^881 + 39079*w^880 + 11266*w^879 + 6749*w^878 + 37060*w^877 + 25112*w^876 + 30901*w^875 + 26029*w^874 + 39518*w^873 + 23383*w^872 + 2547*w^871 + 36760*w^870 + 10250*w^869 + 14248*w^868 + 18089*w^867 + 3916*w^866 + 30031*w^865 + 16992*w^864 + 29224*w^863 + 40453*w^862 + 7280*w^861 + 10257*w^860 + 15329*w^859 + 23453*w^858 + 40722*w^857 + 18916*w^856 + 20852*w^855 + 27695*w^854 + 1716*w^853 + 18717*w^852 + 20879*w^851 +

10816*w^850 + 34695*w^849 + 37612*w^848 + 22093*w^847 + 15648*w^846 + 39124*w^845 + 10683*w^844 + 9558*w^843 + 12601*w^842 + 3843*w^841 + 30243*w^840 + 2585*w^839 + 21490*w^838 + 2493*w^837 + 27248*w^836 + 36929*w^835 + 33826*w^834 + 5771*w^833 + 24936*w^832 + 34930*w^831 + 22840*w^830 + 4529*w^829 + 28967*w^828 + 13572*w^827 + 2043*w^826 + 26776*w^825 + 12201*w^824 + 8699*w^823 + 16441*w^822 + 5236*w^821 + 32796*w^820 + 5111*w^819 + 30794*w^818 + 6467*w^817 + 4320*w^816 + 8075*w^815 + 13626*w^814 + 30078*w^813 + 18141*w^812 + 2721*w^811 + 21336*w^810 + 37593*w^809 + 13033*w^808 + 13273*w^807 + 20294*w^806 + 14853*w^805 + 8187*w^804 + 13326*w^803 + 40822*w^802 + 29711*w^801 + 4070*w^800 + 12785*w^799 + 32719*w^798 + 13722*w^797 + 4203*w^796 + 21828*w^795 + 28018*w^794 + 16162*w^793 + 9892*w^792 + 2594*w^791 + 30614*w^790 + 30014*w^789 + 39932*w^788 + 10486*w^787 + 20916*w^786 + 26466*w^785 + 6347*w^784 + 5927*w^783 + 14007*w^782 + 37804*w^781 + 9717*w^780 + 17050*w^779 + 6622*w^778 + 18074*w^777 + 5985*w^776 + 5620*w^775 + 16375*w^774 + 10991*w^773 + 33103*w^772 + 8818*w^771 + 28220*w^770 + 27324*w^769 + 38942*w^768 + 28881*w^767 + 6998*w^766 + 1759*w^765 + 24786*w^764 + 20839*w^763 + 29245*w^762 + 11330*w^761 + 6594*w^760 + 5099*w^759 + 8036*w^758 + 22394*w^757 + 36686*w^756 + 37435*w^755 + 5261*w^754 + 3836*w^753 + 5964*w^752 + 25519*w^751 + 40066*w^750 + 16241*w^749 + 8789*w^748 + 22375*w^747 + 25900*w^746 + 27912*w^745 + 13666*w^744 + 40824*w^743 + 21873*w^742 + 39074*w^741 + 35479*w^740 + 33192*w^739 + 11841*w^738 + 32286*w^737 + 112*w^736 + 23122*w^735 + 2199*w^734 + 16797*w^733 + 20710*w^732 + 11259*w^731 + 23893*w^730 + 27911*w^729 + 10161*w^728 + 56*w^727 + 49*w^726 + 17517*w^725 + 3068*w^724 + 23570*w^723 + 32487*w^722 + 9578*w^721 + 22814*w^720 + 22932*w^719 + 9371*w^718 + 31134*w^717 + 5209*w^716 + 2392*w^715 + 13324*w^714 + 11479*w^713 + 5081*w^712 + 11049*w^711 + 10864*w^710 + 36981*w^709 + 27057*w^708 + 21504*w^707 + 28234*w^706 + 9067*w^705 + 40787*w^704 + 1573*w^703 + 13806*w^702 + 11168*w^701 + 9859*w^700 + 39368*w^699 + 5494*w^698 + 721*w^697 + 1502*w^696 + 16048*w^695 + 22721*w^694 + 23539*w^693 + 28807*w^692 + 39598*w^691 + 27777*w^690 + 5635*w^689 + 20466*w^688 + 36594*w^687 + 35366*w^686 + 8044*w^685 + 30304*w^684 + 37358*w^683 + 31861*w^682 + 39493*w^681 + 9672*w^680 + 541*w^679 + 33996*w^678 + 34771*w^677 + 26890*w^676 + 19591*w^675 + 10139*w^674 + 27321*w^673 + 39674*w^672 + 11423*w^671 + 17410*w^670 + 11718*w^669 + 30223*w^668 + 5210*w^667 + 5166*w^666 + 37832*w^665 + 18019*w^664 + 26519*w^663 + 15664*w^662 + 22583*w^661 + 35872*w^660 + 15711*w^659 + 6657*w^658 + 39609*w^657 + 32686*w^656 + 13207*w^655 + 19209*w^654 + 32769*w^653 + 24206*w^652 + 21268*w^651 + 2068*w^650 + 28530*w^649 + 15919*w^648 + 38011*w^647 + 19510*w^646 + 24900*w^645 + 11512*w^644 + 1478*w^643 + 40817*w^642 + 22090*w^641 + 11794*w^640 + 32524*w^639 + 23006*w^638 + 28803*w^637 + 11990*w^636 + 19484*w^635 + 32390*w^634 + 23580*w^633 + 1149*w^632 + 11326*w^631 + 40816*w^630 + 9971*w^629 + 18646*w^628 + 28296*w^627 + 20652*w^626 + 30965*w^625 + 32090*w^624 + 26253*w^623 + 10764*w^622 + 1080*w^621 + 33188*w^620 + 34860*w^619 + 18496*w^618 + 8725*w^617 + 11777*w^616 + 20720*w^615 + 4406*w^614 + 23279*w^613 + 23269*w^612 + 32140*w^611 + 1162*w^610 + 10958*w^609 + 6029*w^608 + 18842*w^607 + 24584*w^606 + 38740*w^605 + 10206*w^604 + 26972*w^603 + 37929*w^602 + 22325*w^601 + 28659*w^600 + 4168*w^599 + 4881*w^598 + 727*w^597 + 38752*w^596 + 38485*w^595 + 20152*w^594 + 23337*w^593 + 3838*w^592 + 28429*w^591 + 22451*w^590 + 30227*w^589 + 9048*w^588 + 2799*w^587 + 24049*w^586 + 26854*w^585 + 31037*w^584 + 30023*w^583 + 15408*w^582 + 3456*w^581 + 11621*w^580 + 22656*w^579 + 11828*w^578 + 18243*w^577 + 33484*w^576 + 5398*w^575 + 13593*w^574 + 10931*w^573 + 38630*w^572 + 9815*w^571 + 10575*w^570 + 9218*w^569 + 24207*w^568 + 23999*w^567 + 12866*w^566 + 38366*w^565 + 1052*w^564 + 37753*w^563 + 23976*w^562 + 15695*w^561 + 4602*w^560 + 17217*w^559 + 9118*w^558 + 21647*w^557 + 11475*w^556 + 4025*w^555 + 8059*w^554 + 16867*w^553 + 15058*w^552 + 37238*w^551 + 19327*w^550 + 3997*w^549 + 9800*w^548 + 7218*w^547 + 23026*w^546 + 10757*w^545 + 36616*w^544 + 12554*w^543 + 30913*w^542 + 19246*w^541 + 21719*w^540 + 14288*w^539 + 10289*w^538 + 17602*w^537 + 25874*w^536 + 16130*w^535 + 14251*w^534 + 9186*w^533 + 2649*w^532 + 21857*w^531 + 19188*w^530 + 40953*w^529 + 5811*w^528 + 10205*w^527 + 34422*w^526 + 33682*w^525 + 23305*w^524 + 37992*w^523 + 7855*w^522 + 28351*w^521 + 6369*w^520 + 39200*w^519 + 24815*w^518 + 6691*w^517 + 3974*w^516 + 15662*w^515 + 11458*w^514 + 33235*w^513 + 31451*w^512 + 31740*w^511 + 30732*w^510 + 31800*w^509 + 9604*w^508 + 12465*w^507 + 12703*w^506 + 39931*w^505 + 36957*w^504 + 23692*w^503 + 6817*w^502 + 16045*w^501 + 24128*w^500 + 31242*w^499 + 24732*w^498 + 26482*w^497 + 12299*w^496 + 1175*w^495 + 31180*w^494 + 30560*w^493 + 38308*w^492 + 16710*w^491 + 2513*w^490 + 31659*w^489 + 40355*w^488 + 19128*w^487 + 20444*w^486 + 12216*w^485 + 36987*w^484 + 29313*w^483 + 3743*w^482 + 34509*w^481 + 11271*w^480 + 13796*w^479 + 13813*w^478 + 7304*w^477 + 8268*w^476 + 12738*w^475 + 11840*w^474 + 3680*w^473 + 2743*w^472 + 21758*w^471 + 22880*w^470 + 33439*w^469 + 24681*w^468 + 18496*w^467 + 706*w^466 + 35894*w^465 + 39503*w^464 + 12888*w^463 + 31163*w^462 +

22730*w^461 + 32330*w^460 + 24933*w^459 + 14834*w^458 + 10085*w^457 + 26272*w^456 + 9694*w^455 + 32050*w^454 + 11646*w^453 + 11372*w^452 + 27895*w^451 + 3054*w^450 + 36916*w^449 + 24481*w^448 + 12141*w^447 + 32470*w^446 + 29374*w^445 + 27035*w^444 + 32012*w^443 + 25825*w^442 + 14440*w^441 + 39850*w^440 + 21008*w^439 + 8090*w^438 + 20206*w^437 + 19727*w^436 + 5793*w^435 + 33442*w^434 + 12852*w^433 + 27957*w^432 + 32279*w^431 + 35441*w^430 + 29139*w^429 + 39730*w^428 + 5750*w^427 + 28075*w^426 + 536*w^425 + 5700*w^424 + 7857*w^423 + 27163*w^422 + 3821*w^421 + 189*w^420 + 2430*w^419 + 3138*w^418 + 6851*w^417 + 37083*w^416 + 34337*w^415 + 36490*w^414 + 1746*w^413 + 17433*w^412 + 4509*w^411 + 25999*w^410 + 1768*w^409 + 22952*w^408 + 18131*w^407 + 33442*w^406 + 9262*w^405 + 10650*w^404 + 26799*w^403 + 5320*w^402 + 14726*w^401 + 35119*w^400 + 4137*w^399 + 24214*w^398 + 23492*w^397 + 37971*w^396 + 21565*w^395 + 33093*w^394 + 16867*w^393 + 38047*w^392 + 39672*w^391 + 12533*w^390 + 37030*w^389 + 36600*w^388 + 8899*w^387 + 11225*w^386 + 14812*w^385 + 29154*w^384 + 17172*w^383 + 18490*w^382 + 26902*w^381 + 23415*w^380 + 22316*w^379 + 38319*w^378 + 25780*w^377 + 21211*w^376 + 40721*w^375 + 19527*w^374 + 26609*w^373 + 39947*w^372 + 17316*w^371 + 34525*w^370 + 6222*w^369 + 17649*w^368 + 10510*w^367 + 9445*w^366 + 27424*w^365 + 22179*w^364 + 17831*w^363 + 25558*w^362 + 29769*w^361 + 10541*w^360 + 22536*w^359 + 38913*w^358 + 19885*w^357 + 22979*w^356 + 9749*w^355 + 3140*w^354 + 14580*w^353 + 19507*w^352 + 14011*w^351 + 29570*w^350 + 40284*w^349 + 34422*w^348 + 13447*w^347 + 12672*w^346 + 10612*w^345 + 25666*w^344 + 4320*w^343 + 26208*w^342 + 13047*w^341 + 37246*w^340 + 27012*w^339 + 5245*w^338 + 18578*w^337 + 5846*w^336 + 13204*w^335 + 33589*w^334 + 27811*w^333 + 24367*w^332 + 31113*w^331 + 1761*w^330 + 30761*w^329 + 24770*w^328 + 13447*w^327 + 26003*w^326 + 22200*w^325 + 29914*w^324 + 22771*w^323 + 32970*w^322 + 22568*w^321 + 9292*w^320 + 27286*w^319 + 7129*w^318 + 31634*w^317 + 26330*w^316 + 21618*w^315 + 23572*w^314 + 17383*w^313 + 14867*w^312 + 9646*w^311 + 21532*w^310 + 16273*w^309 + 35099*w^308 + 28736*w^307 + 36543*w^306 + 12061*w^305 + 37794*w^304 + 24767*w^303 + 8473*w^302 + 11180*w^301 + 12710*w^300 + 19572*w^299 + 20861*w^298 + 2476*w^297 + 3726*w^296 + 10885*w^295 + 32902*w^294 + 14830*w^293 + 6840*w^292 + 38854*w^291 + 37707*w^290 + 31542*w^289 + 4835*w^288 + 882*w^287 + 13948*w^286 + 8286*w^285 + 15297*w^284 + 10679*w^283 + 26496*w^282 + 32980*w^281 + 13238*w^280 + 23803*w^279 + 6643*w^278 + 1392*w^277 + 38962*w^276 + 25618*w^275 + 3464*w^274 + 9938*w^273 + 25721*w^272 + 39884*w^271 + 20371*w^270 + 920*w^269 + 17546*w^268 + 30087*w^267 + 30329*w^266 + 30161*w^265 + 8153*w^264 + 24626*w^263 + 23843*w^262 + 6327*w^261 + 15144*w^260 + 5433*w^259 + 35664*w^258 + 12937*w^257 + 38162*w^256 + 4133*w^255 + 1936*w^254 + 6500*w^253 + 34487*w^252 + 2622*w^251 + 9700*w^250 + 19318*w^249 + 22725*w^248 + 22108*w^247 + 18220*w^246 + 36733*w^245 + 15731*w^244 + 13529*w^243 + 14233*w^242 + 20574*w^241 + 33645*w^240 + 12917*w^239 + 3856*w^238 + 40657*w^237 + 16464*w^236 + 32286*w^235 + 37247*w^234 + 37079*w^233 + 31089*w^232 + 33755*w^231 + 3388*w^230 + 17082*w^229 + 8149*w^228 + 19225*w^227 + 40945*w^226 + 3128*w^225 + 33990*w^224 + 11947*w^223 + 852*w^222 + 18071*w^221 + 14295*w^220 + 4098*w^219 + 7419*w^218 + 24846*w^217 + 13574*w^216 + 11381*w^215 + 23342*w^214 + 7723*w^213 + 2883*w^212 + 39665*w^211 + 22579*w^210 + 12287*w^209 + 5509*w^208 + 6461*w^207 + 16248*w^206 + 19569*w^205 + 38241*w^204 + 18523*w^203 + 13432*w^202 + 31355*w^201 + 31000*w^200 + 36421*w^199 + 19547*w^198 + 11344*w^197 + 13392*w^196 + 39985*w^195 + 34283*w^194 + 37225*w^193 + 34859*w^192 + 11439*w^191 + 7292*w^190 + 37777*w^189 + 12424*w^188 + 34139*w^187 + 1454*w^186 + 19633*w^185 + 18266*w^184 + 37585*w^183 + 14696*w^182 + 22783*w^181 + 12190*w^180 + 15629*w^179 + 27849*w^178 + 28036*w^177 + 1641*w^176 + 37500*w^175 + 32290*w^174 + 4811*w^173 + 20690*w^172 + 17067*w^171 + 14304*w^170 + 20590*w^169 + 29086*w^168 + 2890*w^167 + 30226*w^166 + 36196*w^165 + 10723*w^164 + 15096*w^163 + 33601*w^162 + 4444*w^161 + 12351*w^160 + 3652*w^159 + 1510*w^158 + 29146*w^157 + 11122*w^156 + 15124*w^155 + 13234*w^154 + 24141*w^153 + 24116*w^152 + 6784*w^151 + 34808*w^150 + 14501*w^149 + 25514*w^148 + 37149*w^147 + 7235*w^146 + 13516*w^145 + 37677*w^144 + 35839*w^143 + 23353*w^142 + 37840*w^141 + 6657*w^140 + 32001*w^139 + 29564*w^138 + 40823*w^137 + 1924*w^136 + 15513*w^135 + 13328*w^134 + 154*w^133 + 16790*w^132 + 34186*w^131 + 37617*w^130 + 5048*w^129 + 5047*w^128 + 40676*w^127 + 39232*w^126 + 23972*w^125 + 9635*w^124 + 21721*w^123 + 1693*w^122 + 23178*w^121 + 19498*w^120 + 35008*w^119 + 3773*w^118 + 28928*w^117 + 37616*w^116 + 11529*w^115 + 19992*w^114 + 19747*w^113 + 7440*w^112 + 39260*w^111 + 29069*w^110 + 23226*w^109 + 38937*w^108 + 16361*w^107 + 10354*w^106 + 11075*w^105 + 7347*w^104 + 17766*w^103 + 28422*w^102 + 6150*w^101 + 27123*w^100 + 7921*w^99 + 31017*w^98 + 34220*w^97 + 27095*w^96 + 19663*w^95 + 18544*w^94 + 29395*w^93 + 19018*w^92 + 12443*w^91 + 31219*w^90 + 21917*w^89 + 24254*w^88 + 26353*w^87 + 18734*w^86 + 15956*w^85 + 1303*w^84 + 36221*w^83 + 29283*w^82 + 19896*w^81 + 23916*w^80 + 1071*w^79 + 18181*w^78 + 22151*w^77 + 30594*w^76 + 40341*w^75 + 28182*w^74 + 33810*w^73 + 27887*w^72 + 36603*w^71

$$1 + 2617w^{70} + 31824w^{69} + 9840w^{68} + 35684w^{67} + 21325w^{66} + 14175w^{65} + 27569w^{64} + 18740w^{63} + 34069w^{62} + 28545w^{61} + 18371w^{60} + 13428w^{59} + 32393w^{58} + 24322w^{57} + 8117w^{56} + 6585w^{55} + 9780w^{54} + 37530w^{53} + 5847w^{52} + 24457w^{51} + 38951w^{50} + 4187w^{49} + 1718w^{48} + 33063w^{47} + 7293w^{46} + 15779w^{45} + 35732w^{44} + 20459w^{43} + 40372w^{42} + 17462w^{41} + 39466w^{40} + 13956w^{39} + 29814w^{38} + 35706w^{37} + 39114w^{36} + 9701w^{35} + 24376w^{34} + 16308w^{33} + 14357w^{32} + 26829w^{31} + 4604w^{30} + 30706w^{29} + 21420w^{28} + 8073w^{27} + 39079w^{26} + 15716w^{25} + 6703w^{24} + 8473w^{23} + 15140w^{22} + 18161w^{21} + 5124w^{20} + 39956w^{19} + 34742w^{18} + 31520w^{17} + 3765w^{16} + 9858w^{15} + 13843w^{14} + 36814w^{13} + 29722w^{12} + 40538w^{11} + 7372w^{10} + 6255w^9 + 13393w^8 + 25257w^7 + 20168w^6 + 22135w^5 + 34827w^4 + 9073w^3 + 33168w^2 + 34908w + 3839$$

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