```
> #
  http://www.mapleprimes.com/questions/221823-Maple-Too-Slow-For-The-Calculatio
  n-Of
> restart; interface(version);
```

Classic Worksheet Interface, Maple 2016.2, Windows, Oct 21 2016, Build ID 1174570

```
> [r = 2.8749, a = 0.7747, b = 0.3812,  A= 17.4, B = 29000, R = 5.4813,  Z =
  2];
  Params:= convert(%, rational);
  params:=  evalf(%);
```

$$[r = 2.8749, a = 0.7747, b = 0.3812, A = 17.4, B = 29000, R = 5.4813, Z = 2]$$

$$\text{Params} := \left[r = \frac{28749}{10000}, a = \frac{7747}{10000}, b = \frac{953}{2500}, A = \frac{87}{5}, B = 29000, R = \frac{54813}{10000}, Z = 2\right]$$

params := [r = 2.87490000000000, a = 0.774700000000000, b = 0.381200000000000, A = 17.4000000000000, B = 29000., R = 5.48130000000000, Z = 2.]

```
> # using Sum instead of sum or add
  8*Pi^(3/2)*r*R*(Sum((2*r*R)^(2*i)*pochhammer((1/2)*n,
  i)*pochhammer((1/2)*n+1/2,
  i)*(Sum((-1)^j*cos(phi)^(2*j)*(Sum((2*r*cos(phi))^(2.*l)*pochhammer(n+2*i,
  2*l)*hypergeom([2*j+2*l+1, .5], [2*j+2*l+1.5], -1)*(.5*Beta(l+.5,
  n+2*i+l-.5)-sin(arctan(-Z/sqrt(R^2+r^2)))^(2*l+1)*hypergeom([-n-2*i-l+1.5,
  l+.5], [l+1.5],
  sin(arctan(-Z/sqrt(R^2+r^2)))^2)/(2*l+1))/(factorial(2*l)*pochhammer(2*j+2*l+
  1, .5)*(R^2+r^2)^(n+2*i+l-.5)), l = 0 .. 100))/(factorial(i-j)*factorial(j)),
  j = 0 .. i))/factorial(i), i = 0 .. 100)):

  convert(%, rational):
  simplify(%):

  eval(%, Params);
  codegen[makeproc](%, [n, phi]):
  codegen[optimize](%, tryhard):
  codegen[prep2trans](%):
  K:=%;
```

$$\frac{1575818937}{2644356231250000}\pi^2\sqrt{423096997}\sqrt{383096997}\left(\sum_{i=0}^{100}\left(\sum_{j=0}^{i}(-1)^j 2^{(-2-2j)}\cos(\phi)^{(2j)}\left(\sum_{l=0}^{100}\left(4\left(\frac{28749}{10000}\right)^{(2l)}\Gamma(2j+2l+1)\cos(\phi)^{(2l)}\left(\left(\frac{383096997}{10000000}\right)^{(-n-2i-l)}2^{(2l+1)}\left(\frac{423096997}{10000000}\right)^{(-l)}\right.\right.\right.\right.$$

$$\Gamma(n+2i+2l)\left(i+\frac{l}{2}+\frac{n}{2}-\frac{1}{4}\right)\text{hypergeom}\left(\left[l+\frac{1}{2}, -n-2i-l+\frac{3}{2}\right], \left[l+\frac{3}{2}\right], \frac{40000000}{423096997}\right)$$

$$\left.+\frac{1}{766193994}\left(\frac{383096997}{10000000}\right)^{(-n-2i-l+1/2)}\Gamma\left(l+\frac{1}{2}+n+2i\right)\Gamma\left(l+\frac{1}{2}\right)\sqrt{423096997}\sqrt{383096997}\left(l+\frac{1}{2}\right)\right)$$

$$\left.\left.\left.\left.\Big/\left(\Gamma(2l+2)\Gamma(1+j+l)^2(2n+4i+2l-1)\right)\right)\right)\Big/\left(\Gamma(i-j+1)\Gamma(1+j)\right)\right)\left(\frac{1575818937}{100000000}\right)^{(2i)}\Big/\Gamma(i+1)\right)$$

$$/\,\Gamma(n)$$

```
K := proc(n, φ)
local i1, i2, i3, result, s1, s2, s3, t1, t19, t2, t20, t21, t22, t23, t25, t26, t27, t28, t29, t3, t30;
global π, i, j, l;
    t30 := 1 + j;
    t29 := i + 1;
    t23 := 2*i;
    t28 := n + t23;
```

```
    t21 := 2*l;
    t27 := t21 + 1;
    t26 := 423096997^(1 / 2)*383096997^(1 / 2);
    t19 := l + 1 / 2;
    t25 := -n - 2*i - l;
    t22 := 2*j;
    t20 := cos(φ);
    s1 := 0;
    for i1 from 0 to 100 do
        if 0 < -i1 then s2 := 0
        else
            t2 := 1 / 4;
            s2 := t2 / Γ(t29);
            for i2 to i1 do t2 := -1 / 4*t2; s2 := s2 + t2 / Γ(-i2 + t29) end do;
            s3 := 0;
            for i3 from 0 to 100 do s3 := s3 + ((383096997 / 10000000)^t25*2^t27*
                (423096997 / 10000000)^(-i3)*Γ(t21 + t28)*(i1 + 1 / 2*i3 + 1 / 2*n - 1 / 4)*
                hypergeom([t19, 3 / 2 + t25], [i3 + 3 / 2], 40000000 / 423096997)
                 + 1 / 766193994*(383096997 / 10000000)^(1 / 2 + t25)*Γ(t19 + t28)*Γ(t19)*t19*t26) /
                Γ(i3 + t30)^2
            end do;
            s3 := 4*(28749 / 10000)^t21*Γ(t22 + t27)*t20^t21*s3 / (Γ(t21 + 2)*(2*n + 4*i1 + t21 - 1));
            s2 := t20^t22*s3*s2 / Γ(t30)
        end if;
        s1 := s1 + s2
    end do;
    s1 := (1575818937 / 100000000)^t23*s1 / Γ(t29);
    result := 1575818937 / 2644356231250000*π^2*s1*t26 / Γ(n)
end proc
> 
> #Digits:=50;
  eval(a*b(-A*K(3,Pi/6)+B*K(6,Pi/6)), params);
  evalf(eval(a*b(-A*K(3,Pi/6)+B*K(6,Pi/6)), Params));
  Digits:=15;
                                    0.29531564000000
                                    0.29531564000000
                                         Digits := 15
> 
> 
> 
```