

Expand  $\sqrt{g}$  in powers of  $R, \nabla R$  etc.

```
from sympy import *

eps, a, b, c, d = symbols('\epsilon a b c d')

ans = sqrt(1+a*eps**2+b*eps**3+c*eps**4+d*eps**5) # py(ans.001,ans)
ans = ans.series(eps, 0, 6) # py(ans.002,ans)
ans = simplify(ans) # py(ans.003,ans)
```

ans.001 := (??)

ans.002 := (??)

ans.003 := (??)

And while we're here, let's also expand  $\log(g)$  in powers of  $R, \nabla R$  etc.

```
from sympy import *

eps, a, b, c, d = symbols('\epsilon a b c d')

ans = log(1+a*eps**2+b*eps**3+c*eps**4+d*eps**5) # py(ans.101,ans)
ans = ans.series(eps, 0, 6) # py(ans.102,ans)
ans = simplify(ans) # py(ans.103,ans)
```

ans.101 := (??)

ans.102 := (??)

ans.103 := (??)