```
def main():
    Print_Function()
    (a, b, c) = abc = symbols('a,b,c',real=True)
    (o3d, ea, eb, ec) = Ga.build('e_a e_b e_c', g=[1, 1, 1], coords=abc)
    grad = o3d.grad
    x = symbols('x',real=True)
    A = o3d.lt([[x*a*c**2,x**2*a*b*c,x**2*a**3*b**5],\
                [x**3*a**2*b*c,x**4*a*b**2*c**5,5*x**4*a*b**2*c],\
                [x**4*a*b**2*c**4,4*x**4*a*b**2*c**2,4*x**4*a**5*b**2*c]])
    print 'A =',A
    v = a*ea+b*eb+c*ec
    print 'v =',v
    f = v|A(v)
    print r'%f = v\cdot \f{A}{v} =',f
    (grad * f).Fmt(3,r'%\nabla f')
    Av = A(v)
    print r'%\f{A}{v} =', Av
    (grad * Av).Fmt(3,r'%\nabla \f{A}{v}')
    return
```

Code Output:

$$A = \left\{ \begin{array}{ll} L\left(e_a\right) = & ac \wedge 2xe_a + a \wedge 2bcx \wedge 3e_b + ab \wedge 2c \wedge 4x \wedge 4e_c \\ L\left(e_b\right) = & abcx \wedge 2e_a + ab \wedge 2c \wedge 5x \wedge 4e_b + 4ab \wedge 2c \wedge 2x \wedge 4e_c \\ L\left(e_c\right) = & a^3b^5x^2e_a + 5ab^2cx^4e_b + 4a^5b^2cx^4e_c \end{array} \right\}$$

$$v = ae_a + be_b + ce_c$$

$$f = v \cdot A\left(v\right) = acx\left(4a^4b^2c^2x^3 + a^3b^5x + a^2b^2x^2 + a^2c + ab^2c^4x^3 + ab^2x + b^4c^4x^3 + 4b^3c^2x^3 + 5b^3cx^3\right)$$

$$\begin{aligned} \nabla f =& cx\left(20a^4b^2c^2x^3 + 4a^3b^5x + 3a^2b^2x^2 + 3a^2c + 2ab^2c^4x^3 + 2ab^2x + b^4c^4x^3 + 4b^3c^2x^3 + 5b^3cx^3\right)e_a \\ &+ abcx^2\left(8a^4c^2x^2 + 5a^3b^3 + 2a^2x + 2ac^4x^2 + 2a + 4b^2c^4x^2 + 12bc^2x^2 + 15bcx^2\right)e_b \\ &+ ax\left(12a^4b^2c^2x^3 + a^3b^5x + a^2b^2x^2 + 2a^2c + 5ab^2c^4x^3 + ab^2x + 5b^4c^4x^3 + 12b^3c^2x^3 + 10b^3cx^3\right)e_c \end{aligned}$$

$$A\left(v\right) = acx\left(a^2b^5x + ac + b^2x\right)e_a + abcx^3\left(a^2 + b^2c^4x + 5bcx\right)e_b + ab^2c^2x^4\left(4a^4 + ac^2 + 4b\right)e_c$$

$$\begin{aligned} \nabla A\left(v\right) =& cx\left(8a^5b^2x^3 + a^3x^2 + 3a^2b^5x + 4a^2b^2c^2x^3 + 8ab^3x^3 + 3ab^2c^4x^3 + 10abcx^3 + 2ac + b^2x\right) \\ &+ bcx^2\left(-5a^3b^3 + 3a^2x - 2a + b^2c^4x^2 + 5bcx^2\right)e_a \wedge e_b \\ &+ x\left(20a^4b^2c^2x^3 - a^3b^5x - 2a^2c + 2ab^2c^4x^3 - ab^2x + 4b^3c^2x^3\right)e_a \wedge e_c \\ &+ abx^3\left(8a^4c^2x - a^2 + 2ac^4x - 5b^2c^4x + 12bc^2x - 10bcx\right)e_b \wedge e_c \end{aligned}$$