```
def derivatives_in_spherical_coordinates():
    Print_Function()
    X = (r,th,phi) = symbols('r theta phi')
    curv = [[r*cos(phi)*sin(th),r*sin(phi)*sin(th),r*cos(th)],[1,r,r*sin(th)]]
    (er,eth,ephi,grad) = MV.setup('e_r e_theta e_phi',metric='[1,1,1]',coords=X,curv=curv)
    f = MV('f','scalar',fct=True)
    A = MV('A','vector',fct=True)
    B = MV('B','grade2',fct=True)
    print 'f =',f
    print 'A =',A
    print 'B =',B
    print 'grad*f =',grad*f
    print 'grad|A =',grad|A
    print '-I*(grad^A) =',-MV.I*(grad^A)
    print 'grad^B =',grad^B
    return
```

Code Output:

$$f = f$$

$$A = A^{r}\boldsymbol{e_{r}} + A^{\theta}\boldsymbol{e_{\theta}} + A^{\phi}\boldsymbol{e_{\phi}}$$

$$B = B^{r\theta}\boldsymbol{e_{r}}\wedge \boldsymbol{e_{\theta}} + B^{r\phi}\boldsymbol{e_{r}}\wedge \boldsymbol{e_{\phi}} + B^{\theta\phi}\boldsymbol{e_{\theta}}\wedge \boldsymbol{e_{\phi}}$$

$$\boldsymbol{\nabla} f = \partial_{r} f\boldsymbol{e_{r}} + \frac{\partial_{\theta} f}{r}\boldsymbol{e_{\theta}} + \frac{\partial_{\phi} f}{r \sin{\left (\theta \right)}}\boldsymbol{e_{\phi}}$$

$$\boldsymbol{\nabla} \cdot A = \partial_{r} A^{r} + \frac{A^{\theta}}{r \tan{\left (\theta \right)}} + 2 \frac{A^{r}}{r} + \frac{\partial_{\theta} A^{\theta}}{r} + \frac{\partial_{\phi} A^{\phi}}{r \sin{\left (\theta \right)}}$$

$$-I(\boldsymbol{\nabla} \wedge A) = \left (\frac{A^{\phi} \cos{\left (\theta \right)} + \sin{\left (\theta \right)} \partial_{\theta} A^{\phi} - \partial_{\phi} A^{\theta}}{r \sin{\left (\theta \right)}}\right) \boldsymbol{e_{r}} + \left (- \partial_{r} A^{\phi} - \frac{A^{\phi}}{r} + \frac{\partial_{\phi} A^{r}}{r \sin{\left (\theta \right)}}\right) \boldsymbol{e_{\theta}} + \left (\frac{r \partial_{r} A^{\theta} + A^{\theta} - \partial_{\theta} A^{r}}{r}\right) \boldsymbol{e_{\phi}}$$

$$\boldsymbol{\nabla} \wedge B = \left (\partial_{r} B^{\theta\phi} + 2 \frac{B^{\theta\phi}}{r} - \frac{B^{r\phi}}{r \tan{\left (\theta \right)}} - \frac{\partial_{\theta} B^{r\phi}}{r} + \frac{\partial_{\phi} B^{r\theta}}{r \sin{\left (\theta \right)}}\right) \boldsymbol{e_{r}}\wedge \boldsymbol{e_{\theta}}\wedge \boldsymbol{e_{\phi}}$$