In [21]:
```
from sympy import *
x, y, z = symbols('x y z')
A, B, C, M, G = symbols('A B C M G')
```

In [22]:
```
r = (x**2+y**2+z**2)**(0.5)
```

In [23]:
```
# momento de inercia en direccion generica
I = (A*x**2 + B*y**2 + C*z**2)/r**2
```

In [24]:
```
V = -G/r*(M+(A + B + C - 3*I)/(2*r**2))
```

In [25]:
```
# derivadas parciales del potencial V
derx = diff(V, x)
```

In [26]:
```
dery = diff(V, y)
```

In [27]:
```
derz = diff(V, z)
```

In [28]:
```
#producto vectorial de vector r y gradiente de V
v1 = Matrix([derx,dery,derz])
v2 = Matrix([x,y,z])
prodvectorial = v1.cross(v2)
```

In [29]:
```
# le pido que me muestre resultado simplificando
simplify(prodvectorial)
```

Out[29]:

$$\begin{bmatrix} \frac{3.0Gyz(B-C)}{\left(x^2+y^2+z^2\right)^{2.5}} \\ \frac{3.0Gxz(-A+C)}{\left(x^2+y^2+z^2\right)^{2.5}} \\ \frac{3.0Gxy(A-B)}{\left(x^2+y^2+z^2\right)^{2.5}} \end{bmatrix}$$

In [19]:
```
# claramente no es cero por lo tanto r y gradiente de V no son colineales
```

In [ ]:
```
```