In[1]:=
```
g = {0, -9.8, 0};
MatrixForm[g]
```

Out[2]//MatrixForm=

$$\begin{pmatrix} 0 \\ -9.8 \\ 0 \end{pmatrix}$$

In[3]:=
```
q = {x, y, z};
MatrixForm[q]
```

Out[4]//MatrixForm=

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

In[5]:=
```
Vgravity = m * -g.q
```

Out[5]= $9.8\, m\, y$

In[6]:=
```
D[Vgravity, x]
```

Out[6]= 0

In[7]:=
```
D[Vgravity, y]
```

Out[7]= $9.8\, m$

In[8]:=
```
D[Vgravity, z]
```

Out[8]= 0

In[9]:=
```
MatrixForm[m * -g]
```

Out[9]//MatrixForm=

$$\begin{pmatrix} 0 \\ 9.8\, m \\ 0 \end{pmatrix}$$