$$
\begin{aligned}
f(x,y,z) = x^2 + y^2 + z^2 - R^2 &= 0 \\
\text{normal} = \frac{\partial f}{\partial x}\hat{\mathbf{x}} + \frac{\partial f}{\partial y}\hat{\mathbf{y}} + \frac{\partial f}{\partial z}\hat{\mathbf{z}} &= 2x\hat{\mathbf{x}} + 2y\hat{\mathbf{y}} + 2z\hat{\mathbf{z}}
\end{aligned}
$$