## Solution to Problem 114B:

From the given expressions:

$$
\begin{equation*}
\frac{\partial u}{\partial x}=\frac{6 x^{2} y z-2 y^{3} z}{\left(x^{2}+y^{2}\right)^{3}} \tag{1}
\end{equation*}
$$

and

$$
\begin{equation*}
\frac{\partial v}{\partial y}=\frac{-6 x^{2} y z+2 y^{3} z}{\left(x^{2}+y^{2}\right)^{3}} \tag{2}
\end{equation*}
$$

and

$$
\begin{equation*}
\frac{\partial w}{\partial z}=0 \tag{3}
\end{equation*}
$$

Therefore

$$
\begin{equation*}
\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}+\frac{\partial w}{\partial z}=0 \tag{4}
\end{equation*}
$$

and therefore since the divergence of the velocity is zero the fluid is incompressible.

