## Supplemental Problems of Assignment 9

Use the method of characteristic to solve the first-order quasi-linear equation

$$
\begin{align*}
u^{2} \frac{\partial u}{\partial x}+\frac{\partial u}{\partial y} & =3 u  \tag{1}\\
u(x, 0) & =\sqrt{x} \tag{2}
\end{align*}
$$

