$$u = (r^2 + s^2)^{1/2}, \quad r = y + x\cos t, \quad s = x + y\sin t \quad \Rightarrow$$

$$\begin{aligned}
\frac{\partial u}{\partial x} &= \frac{\partial u}{\partial r}\frac{\partial r}{\partial x} + \frac{\partial u}{\partial s}\frac{\partial s}{\partial x} = \tfrac{1}{2}(r^2+s^2)^{-1/2}(2r)(\cos t) + \tfrac{1}{2}(r^2+s^2)^{-1/2}(2s)(1) \\
&= (r\cos t + s)/\sqrt{r^2+s^2}, \\
\frac{\partial u}{\partial y} &= \frac{\partial u}{\partial r}\frac{\partial r}{\partial y} + \frac{\partial u}{\partial s}\frac{\partial s}{\partial y} = \tfrac{1}{2}(r^2+s^2)^{-1/2}(2r)(1) + \tfrac{1}{2}(r^2+s^2)^{-1/2}(2s)(\sin t) \\
&= (r + s\sin t)/\sqrt{r^2+s^2}, \\
\frac{\partial u}{\partial t} &= \frac{\partial u}{\partial r}\frac{\partial r}{\partial t} + \frac{\partial u}{\partial s}\frac{\partial s}{\partial t} = \tfrac{1}{2}(r^2+s^2)^{-1/2}(2r)(-x\sin t) + \tfrac{1}{2}(r^2+s^2)^{-1/2}(2s)(y\cos t) \\
&= \frac{-rx\sin t + sy\cos t}{\sqrt{r^2+s^2}}.
\end{aligned}$$

When $x = 1$, $y = 1$, and $t = 0$ we have

$r = 2$ and $s = 1$, so

$\frac{\partial u}{\partial x} = \frac{3}{\sqrt{5}}$,

$\frac{\partial u}{\partial y} = \frac{2}{\sqrt{5}}$,

and $\frac{\partial u}{\partial t} = \frac{1}{\sqrt{5}}$.