Please PRINT your name _____

No calculators, cell phones, computers, notes, etc.

Circle your answer. | Make your work correct, complete and coherent. |

Please take a picture of your quiz (for your records) just before you turn the quiz in. I will e-mail your grade and my comments to you. I will return your quiz when I next see you.

The quiz is worth 5 points. The solutions will be posted on my website later today.

Quiz 5, October 21, 2024

Let $z = 4e^x \ln y$, $x = \ln(u \cos v)$, and $y = u \sin v$. Find $\frac{\partial z}{\partial u}$. (You may use any legitimate method.)

Answer:

We compute

$$
\begin{aligned}
z &= 4e^x \ln y \\
&= 4e^{\ln(u \cos v)} \ln(u \sin v) \\
&= 4u \cos v \ln(u \sin v);
\end{aligned}
$$

hence

$$
\frac{\partial z}{\partial u} = 4u \cos v \cdot \frac{1}{u} + [\ln(u \sin v)] \cdot 4 \cos v
$$

$$
\frac{\partial z}{\partial u} = \boxed{4 \cos v + [\ln(u \sin v)] \cdot 4 \cos v}
$$