$$
\begin{aligned}
& \text { Ex Evaluate te integral }-213 \text { - } \\
& \text { ( })\left(e^{(x-y)(x+y)}\right. \text { a tran }
\end{aligned}
$$

$$
\begin{aligned}
& \text { Evaluate the integral } \\
& \left(\cdot \iint_{R} e^{\left.(x-y)(x-y)^{2}\right)} d A \quad R i\right) \text { a traps } \mathbb{Z} \text { ioidacregion wise }
\end{aligned}
$$

$$
\begin{aligned}
& R \\
& \text { vertices }(R, 0),(3,0),(0,-4),(0,-3)
\end{aligned}
$$

$$
\begin{aligned}
& \text { vertices }(R, 0),(3,0),(0,2) \text { move a change of the variables } \\
& \text { solution } x-y=2, T T_{2}
\end{aligned}
$$

$$
\int_{-3}^{2} \int_{0}^{3} \rightarrow x-y=3
$$

$$
\begin{aligned}
& \text { maia a change of he } \quad v=x-y: T-1 \\
& \text { wespect } \quad u=x+y \quad x=\frac{1}{2}(u+w) \quad y=\frac{1}{2}(u-v): T \\
& \text { using hang, } u x
\end{aligned}
$$

$$
\frac{\partial(x, y)}{\partial(u, v)}=\left|\begin{array}{ll}
\frac{\partial x}{\partial u} & \frac{\partial x}{\partial v} \\
\frac{\partial y}{\partial u} & \frac{\partial y}{\partial v}
\end{array}\right|=+\frac{1}{2}
$$

$$
\begin{aligned}
& f \text { ind the region Sin ur plane } \\
& x=2 \quad y=0 \quad 2=\frac{1}{2}(u+v) \quad-\quad 0=\frac{1}{2}(u+r)
\end{aligned}
$$

$$
\begin{aligned}
& \text { Ind the region Sin ur } \\
& x=2 y=0 \quad 2=\frac{1}{2}(u+v) \quad 0=\frac{1}{2}(u+r) \Rightarrow u=v \Rightarrow u=2=r
\end{aligned}
$$

$$
\begin{array}{lll}
x=2 & y=0 & 2=\frac{1}{2}(u+v) \\
x=0 & y=-2 & 0=1(u+v) \quad-2=\frac{1}{2}(u-v) \Rightarrow u=-v \Rightarrow v=2, u=-2
\end{array}
$$

$$
\begin{aligned}
& \Rightarrow \text { tintiline }(3,0),(0,-2) \longrightarrow\left(\sum^{2}, 2\right)(-2,2),(0,0)(0,-3) \longrightarrow(3,3)(-3,3), ~ \\
& \text { analogously }
\end{aligned}
$$

$$
\begin{aligned}
& \text { define the line } \\
& \text { the po in's. }(-2,2,(-3,3)\} \Rightarrow u=-v 1
\end{aligned}
$$

$$
=\int_{2}^{3} \int_{-v}^{v} v^{2} e^{v u}\left(-\frac{1}{2}\right) d u d v=-\left.\frac{1}{2} \int_{2}^{3} \quad \frac{\left.v^{2} e^{v \cdot u}\right|_{-v} ^{v} d v=}{v}\right|_{-v} ^{v} d v
$$

$$
\begin{aligned}
& =\frac{1}{2} \int^{3} v e^{v^{2}} d v+\frac{1}{2} \int v e^{-v^{2}} d v=-\frac{1}{4} \int_{4}^{9} e^{w} d w-\frac{1}{4} \int_{-4}^{-9} e^{z} d z \\
& \quad<v^{2}=w \rightarrow v v d v=a t w
\end{aligned}
$$

$$
\begin{aligned}
& 2 v^{2}=w \rightarrow<v d v=a t w \\
& -v^{2}=z \rightarrow-2 v d v=d z
\end{aligned}
$$

You have to complete the calculations in solving the two integrals.

