(27) $\iint_R e^{x+y}\,dA \quad |x|+|y|\le 1$

$$\begin{cases} x+y\le 1 & x,y>0 \\ -x+y\le 1 & x<0 \quad y\ge 0 \\ -x-y\le 1 & x,y<0 \\ x-y\le 1 & x\ge 0 \quad y<0 \end{cases}$$

$$\begin{cases} -1\le x+y\le 1 \\ -1\le x-y\le 1 \end{cases} \qquad \begin{aligned} u&=x+y \quad u\in[-1,1] \\ v&=x-y \quad v\in[-1,1] \end{aligned}$$

$$u+v=2x$$

$$x=\frac{u+v}{2} \qquad y=\frac{u-v}{2}$$

$$\left|\frac{\partial(x,y)}{\partial(u,v)}\right| = \left|\begin{vmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & -\frac{1}{2} \end{vmatrix}\right| = \left|-\frac{1}{4}-\frac{1}{4}\right| = \left|-\frac{1}{2}\right| = \frac{1}{2}$$

$$\frac{1}{2}\int_{-1}^{1}\int_{-1}^{1} e^{v}\,du\,dv = \frac{1}{2}\int_{-1}^{1} dv \int_{-1}^{1} e^{v}\,du = \frac{1}{2}(2)\left(e^{1}-e^{-1}\right)$$

$$= e-e^{-1} = \boxed{e-\frac{1}{e}}$$