$f_\xi(x)=\begin{cases}\frac{1}{3}, & x\in[-4;-1],\\ 0, & x\notin[-4;-1].\end{cases}$ $f_\eta(x)=\begin{cases}\frac{1}{3}, & y\in[1;4],\\ 0, & y\notin[1;4].\end{cases}$

$$f_{\xi+\eta}(z)=\int_{-\infty}^{\infty} f_\xi(z-y)f_\eta(y)dy=\int_{1}^{4} f_\xi(z-y)f_\eta(y)dy=\left|\begin{matrix} z-y=u\\ dy=-du\end{matrix}\right|=$$

$$=-\frac{1}{3}\int_{z-1}^{z-4} f_\xi(u)du=\begin{cases}0, & z\in(-\infty;-3]\cup(3;+\infty)\\ \frac{z-3}{9}, & z\in(0;3]\\ \frac{z+3}{9}, & z\in(-3;0]\end{cases}$$ //

$=\frac{1}{3}\int_{z-4}^{z-1} f_\xi(u)du$ //

1) $z-4>-1 \Rightarrow z>3$, $f_{\xi+\eta}(z)=0$

2) $z-1\le-4 \Rightarrow z\le-3$, $f_{\xi+\eta}(z)=0$

3) $\begin{cases}z-1>-1\\ z-4\le-1\end{cases}$, $\begin{matrix}z>0\\ z\le3\end{matrix} \Rightarrow z\in(0;3]$

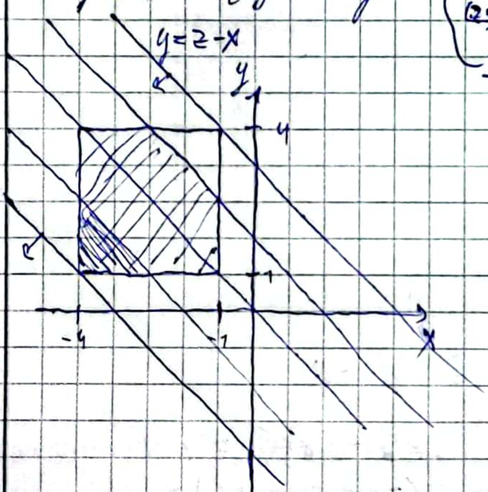
$f_{\xi+\eta}(z)=\frac{1}{9}\int_{z-4}^{-1} du=\frac{z-3}{9}$;

4) $\begin{matrix}z-4\le-4\\ z-1>-4\end{matrix}$, $\begin{matrix}z\le0\\ z>-3\end{matrix} \Rightarrow z\in(-3;0]$

$f_{\xi+\eta}(z)=\frac{1}{9}\int_{-4}^{z-1} du=\frac{z+3}{9}$.

$$F_{\xi+\eta}(z)=P(\xi+\eta\le z)=\iint_{x+y\le z} f_{\xi,\eta}(x,y)dxdy=$$

$$=\iint_{x+y\le z} f_\xi(x)f_\eta(y)dxdy=\begin{cases}1, & z>3\\ 0, & z\le-3\\ \frac{(z+3)^2}{18}, & z\in(-3;0]\\ 1-\frac{(z-3)^2}{18}, & z\in(0;3]\end{cases}$$ //




$z\in(-3;0]$

$$F_{\xi+\eta}(z)=\int_{x=-4}^{z-1}\left(\int_{1}^{y=z-x}\frac{1}{9}dy\right)dx=\frac{2z^2-2z-z^2+2z-1-2z+2-(-8z-16+8)}{18}=$$

$=\frac{(z+3)^2}{18}$

$z\in(0;3]$

$$F_{\xi+\eta}(z)=1-\int_{z-4}^{-1}\left(\int_{y=z-x}^{4}\frac{1}{9}dy\right)dx=1-\frac{1+2z-8-(z^2-8z+16-(z^2+8z+8z-32))}{18}=$$

$=1-\frac{(z-3)^2}{18}$