北京理工大学 BEIJING INSTITUTE OF TECHNOLOGY

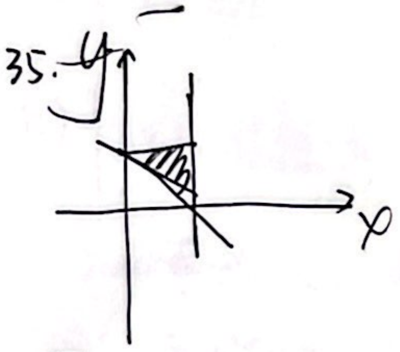
作业纸

课程名称：概统

班级：63012216　教学班级：08012204　姓名：俞子峰　学号：1120224303　第 1 页

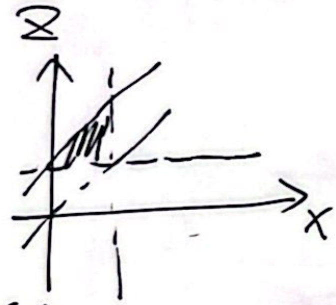
19–34. 已纸质版上交.

35.



$f_Z(z)=\int_{-\infty}^{\infty} f(x,z-x)\,dx$

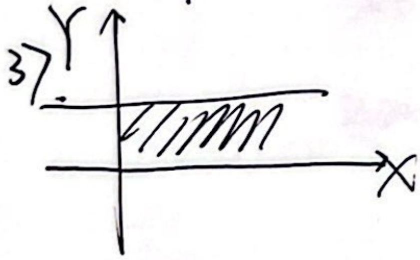
$1-z+x<x<1 \Rightarrow \begin{cases} z>1 \\ x<1 \end{cases}$



$0<z-x<1 \Rightarrow \begin{cases} z>x \\ z<1+x \end{cases}$

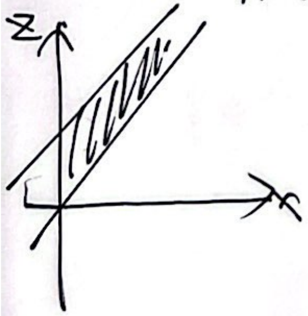
$f_Z(z)=\int_{1}^{z+1} 3x\,dx = \begin{cases} 3x-\frac{3}{2}x^2, & 1<z<2 \\ 0, & 其他 \end{cases}$

37.



$f(x,y)=\begin{cases} 2ye^{-x}, & (x>0,\ y\in(0,1)) \\ 0 & 其他 \end{cases}$

$Z=X+Y \therefore Y=Z-X \quad 0<z-x<1 \Rightarrow \begin{cases} z>x \\ z<x+1 \end{cases}$



$f_Z(z)=\int_{0}^{z} 2(z-x)e^{-x}\,dx = \begin{cases} 2(z+e^{-z}-1), & 0<z<1 \\ 2e^{-z}, & z\geq 1 \\ 0, & 其他 \end{cases}$

联系方式：

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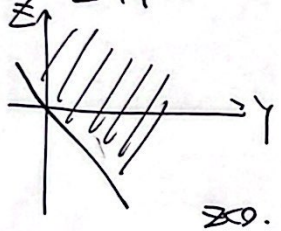
班级：　　教学班级：　　姓名：　　学号：　　第 2 页

29. (1) $f_1(x) = \frac{1}{2\sqrt{\pi}} e^{-\frac{(x-1)^2}{4}}$

(2) $f_2(x) = \frac{1}{2\sqrt{\pi}} e^{-\frac{(x+1)^2}{4}}$.

41. ~~$Z = X + Y$~~ $X = Z + Y$. $Y > 0$

$\therefore Z + Y > 0$ $\therefore$ $Z > -Y$



$f(z+y, y) = \begin{cases} e^{-(z+2y)}, & y>0,\ z>-y \\ 0, & \text{其它} \end{cases}$

~~$Z < 0$ 时~~.

$z \le 0$. $f_Z(z) = \int_{-y}^{+\infty} e^{-(z+2y)}\,dy = \frac{1}{2}e^{z}$

$z > 0$. $f_Z(z) = \int_{0}^{+\infty} e^{-(z+2y)}\,dy = \frac{1}{2}e^{-z}$

$\therefore f_Z(z) = \frac{1}{2}e^{-|z|}$

45. (1). 不独立

(2). $f_M(z) = \begin{cases} 3z^2, & 0<z<1 \\ 0, & \text{其它} \end{cases}$

46. $f_Z(z) = \begin{cases} 1, & 0<z<1 \\ 0, & \text{其它} \end{cases}$