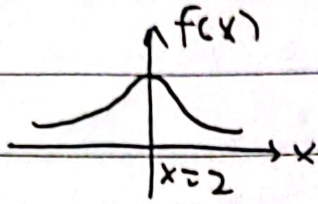
-2 -1 0 1 2 3

35. $\mu=\sigma^2=2$时 $f(x)$关于$x=2$对称



$\therefore C=2$

0.113

38. $P(X\le 60)=\Phi\left(\frac{60-66}{\sigma}\right)=\Phi\left(-\frac{6}{\sigma}\right)=0.25$

$\therefore \Phi\left(\frac{6}{\sigma}\right)=0.75$， $\frac{6}{\sigma}=0.68$，$\sigma=8.82$

$P(X>65)=1-P(X\le 65)=1-\Phi\left(-\frac{1}{\sigma}\right)=\Phi\left(\frac{1}{\sigma}\right)=0.54$

$\therefore P=1-(1-0.54)^3=0.90$

1-(7-1-0)

39. $P(|X|>23.26)=1-P(|X|\le 23.26)=1-(P(X\le 23.26)-P(X\le -23.26))$

$=1-\left(\Phi\left(\frac{23.26}{10}\right)-\Phi\left(-\frac{23.26}{10}\right)\right)=2-2\Phi(2.326)=0.02$

$\therefore P=1-0.98^{200}-C_{200}^{1}\times 0.02\times 0.98^{199}-C_{200}^{2}\times 0.02^2\times 0.98^{198}-C_{200}^{3}\times 0.02^3\times$
$0.98^{197}=0.57$

41. 对于X，有$P(X=-2)=0.3$，$P(X=-1)=0.6$，$P(X=2)=0.1$

$\therefore$对于$Y=X^2-3$，有$P(Y=1)=0.4$，$P(Y=-2)=0.6$

对于$Z=|X|$：有$P(Z=2)=0.4$，$P(Z=1)=0.6$

Y	-2	1
P	0.6	0.4

Z	1	2
P	0.6	0.4

42. (1)

Y_1	-1	1
P	$\frac{2}{5}$	$\frac{3}{5}$

$2y-1<0$ $f_X = \frac{1}{5}$ $Y_2 \sim U(-\frac{1}{2}, 2)$ $\frac{x^2}{10}+\frac{2}{5}x$ $2y-$ $(2y-1)$ $\frac{4}{5}$ $\int_{-\frac{1}{2}}^{2}$

(2). $Y_2=\frac{X+1}{2}$,

当 $y<-\frac{1}{2}$ 时 $P(X\le 2y-1)=0$，$y>2$ 时 $P(X\le 2y-1)=0$

当 $-\frac{1}{2}\le y\le 2$ 时 $P(X\le 2y-1)=\frac{2y+1}{5}$

(2) $Y_2=\frac{X+1}{2}$，则 $P(Y_2\le y)=P(\frac{X+1}{2}\le y)=P(X\le 2y-1)$

$F_Y(y)=F_X(2y-1)$，$f_Y(y)=f_X(2y-1)\cdot 2$

当 $2y-1<-2$，$y<-\frac{1}{2}$ 时，$f_X(2y-1)=0$. $f_Y(y)=0$

当 $2y-1>3$，$y>2$ 时，$f_X(2y-1)=0$. $f_Y(y)=0$

当 $-2\le 2y-1\le 3$，$-\frac{1}{2}\le y\le 2$ 时，$f_X(2y-1)=\frac{1}{5}$，$f_Y(y)=\frac{2}{5}$，

$-x\le \ln y$ $(\frac{1}{e})^x\le y$ $x\ge \ln\frac{1}{y}$

43. (1) 设 $y>0$ $P(Y_1\le y)=P(X^2\le y)=P(-\sqrt{y}\le X\le\sqrt{y})$

$F_{Y_1}(y)=F_X(\sqrt{y})-F_X(-\sqrt{y})$

$f_{Y_1}(y)=f_X(\sqrt{y})\cdot\frac{1}{2\sqrt{y}}+f_X(-\sqrt{y})\frac{1}{2\sqrt{y}}$

$=\frac{1}{2\sqrt{y}}\cdot\frac{1}{\sqrt{2\pi}}\cdot e^{-\frac{y}{2}}\times 2=\frac{1}{\sqrt{2\pi}}\cdot\frac{1}{\sqrt{y}}e^{-\frac{y}{2}}$

(2) $P(Y_2\le y)=P(e^{-X}\le y)=P(X\ge -\ln y)$

$F_{Y_2}(y)=1-F_X(-\ln y)$

$f_{Y_2}(y)=-f_X(-\ln y)\cdot(-\frac{1}{y})=\frac{1}{y}f_X(-\ln y)$

$=\frac{1}{y}\cdot\frac{1}{\sqrt{2\pi}}e^{-\frac{\ln^2 y}{2}}$

(3) $P(Y_3\le y)=P(X+|X|\le y)=P(2X\le y)$ 设 $y\ge 0$

$=P(X\le\frac{y}{2})=F_{Y_3}(y)=\frac{1}{\sqrt{2\pi}}\cdot e^{-\frac{(\frac{y}{2})^2}{2}}=\frac{1}{\sqrt{2\pi}}e^{-\frac{y^2}{8}}$

$\# \quad -\frac{1}{1+y}$ $\quad \frac{1}{1+y}=1-F_Y(y) \quad \frac{1}{1-F_Y(y)}-1=y$

44. $P(Y\le y)=P(3-2X\le y)=P(X\ge \frac{3-y}{2})$

$=1-P(X<\frac{3-y}{2})=1-F_X(\frac{3-y}{2})$

补：$F_Y(y)=\int_0^y \frac{1}{(1+y)^2}dy=1-\frac{1}{1+y}$，严格单增，有界，右连续

则$g(x)$为$F_Y(y)$的反函数，$g(x)=\frac{1}{1-x}-1$