$A=\{x|x^2-2x-3<0\}$ $B=\{x|2^{x+1}>1\}$ $\complement_B A=($ $)$

$[3,+\infty)$ $(3,+\infty)$ $(-\infty,-1]\cup[3,+\infty)$ $(-\infty,-1)\cup(3,+\infty)$

$(1+\frac{1}{x^2})(1+x)^6$ x^2

( ) – √ –

a *b* *c*

R $f(x)$ $f(x+2)=-\frac{1}{f(x)}$ $(0,1)$ $f(x)=3^x$ $f(\log_3 54)=($ $)$

$\frac{3}{2}$ $\frac{2}{3}$ $-\frac{3}{2}$ $-\frac{2}{3}$

$f(x)$ $(-\infty,+\infty)$ $f(1)=-1$

$-1\leqslant f(x-2)\leqslant 1$ *x* ( )

$[-2,2]$ $[-1,1]$ $[0,4]$ $[1,3]$

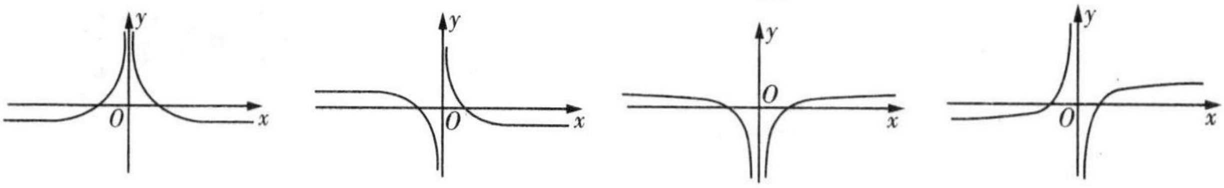
x *y* ( )

$(-\infty,-8]\cup[1,+\infty)$ $(-\infty,-10]\cup[-1,+\infty)$

( )

– – –

$f(x)=\begin{cases}\frac{\ln x}{1+x}, x>0\\ \frac{\ln(-x)}{1-x}, x<0\end{cases}$ ( )



a *b* ( )

( )

R R

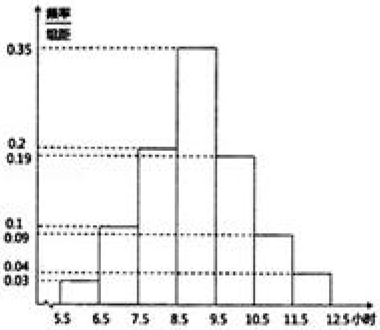
r r

《 》

$X($ $)$

(1) $\bar{x}$ $s^2($

$)$



(2) $N(\mu,\sigma^2)$

μ $\bar{x}$ σ^2 s^2

(i)

$X\tilde{}N(\mu,\sigma^2)$ $Y=\dfrac{X-\mu}{\sigma}$ $Y\tilde{}N(0,1)$ $)$ $P(X\leqslant a)=P\left(Y\leqslant\dfrac{a-\mu}{\sigma}\right)$

$P(X\leqslant 10)$

(ii)

$P(Z\geqslant 2)($ $0.0001)$ $\sqrt{178}\approx\dfrac{40}{3}, 0.7734^{19}\approx 0.0076.$

$Y\tilde{}N(0,1)$ $P(Y\leqslant 0.75)=0.7734$

$m($

$60\leqslant m\leqslant 130)$

$y($ $/$ $)$ $($

$1-13$ $)$

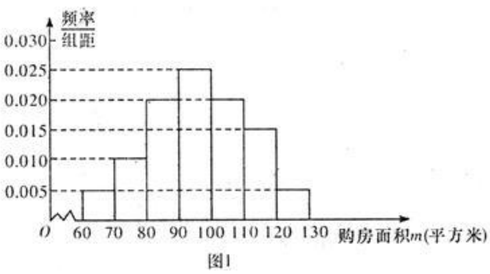


图1

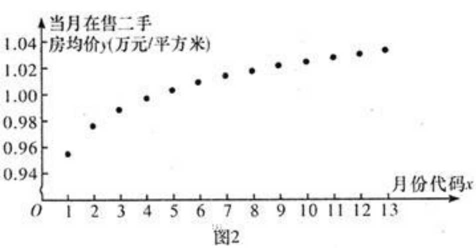


图2

(1) $\bar{m}$ $($ $)$

(2)

(3) $\hat{y}=\hat{a}+\hat{b}\sqrt{x}$ $\hat{y}=\hat{c}+\hat{d}\ln x$

$\hat{y}=0.9369+0.0285\sqrt{x}$ $\hat{y}=0.9554+0.0306\ln x$

	[illegible]	$\hat{y} = 0.9554 + 0.0306 \ln x$
$\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})$	0.005459	0.005886
$\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}$	0.006050	

(　　0.001)

$\ln 2 \approx 0.69, \ln 3 \approx 1.10, \ln 15 \approx 2.71, \sqrt{3} \approx 1.73, \sqrt{15} \approx 3.87, \sqrt{17} \approx 4.12$

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

$f(x)=\log_{\frac{1}{2}}(x^2+1)$　$g(x)=x^2\text{-}ax+6$

(1) $g(x)$ 　 $g(x)$

(2) $g(x) < 0$ 　 $\{x|2 < x < 3\}$ 　 $x > 1$ 　 $\frac{g(x)}{x\text{-}1}$

(3) $x_1 \in [1,+\infty), x_2 \in [\text{-}2,4]$ 　 $f(x_1) \leqslant g(x_2)$

$f(x) = a - \frac{1}{2^x + 1}$

(1)

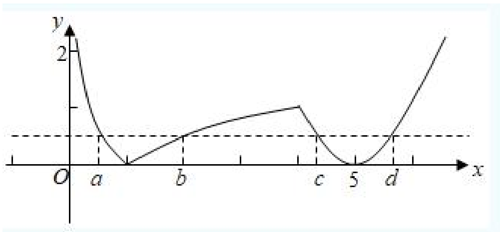
(2) $f(x)$ 　(　　) 　$f(x)$

(3)

ACACD *ACCCB* *BD* *ABD*

$(4,+\infty)$ $-x(1-x)$ $\frac{13}{28}$ $(24,25)$ $(-\infty,-\frac{2}{e}]$

$$f(x)=\begin{cases}|\log_4 x|, 0<x\leqslant 4\\ x^2-10x+25, x>4\end{cases}$$



$\because a$ b c d $a<b<c<d$ $f(a)=f(b)=f(c)=f(d)$

$-\log_4 a=\log_4 b$ $\log_4 a+\log_4 b=0$ $ab=1$

$abcd=cd$

$c+d=10$ $cd<(\frac{c+d}{2})^2=25$

$cd=c(10-c)=-(c-5)^2+25$ $c\in(4,5)$

$\therefore cd>24$

abcd $(24,25)$

$(24,25)$

$a\leqslant x\ln x+ex^2-2x$

$f(x)=x\ln x$ $g(x)=ex^2-2x$

$h(x)=f(x)+g(x)$ $a\leqslant h(x)_{min}$

$g(x)=e\left(x-\frac{1}{e}\right)^2-\frac{1}{e}$

$f'(x)=\ln x+1$ $0<x<\frac{1}{e}$ $f'(x)<0$ $x>\frac{1}{e}$ $f'(x)>0$

$x=\frac{1}{e}$ $f(x)$ $g(x)$

$h(x)_{min}=h\left(\frac{1}{e}\right)=-\frac{2}{e}$

$(-\infty,-\frac{2}{e}]$

$(1)\bar{x} = 6 \times 0.03 + 7 \times 0.1 + 8 \times 0.2 + 9 \times 0.35 + 10 \times 0.19 + 11 \times 0.09 + 12 \times 0.04 = 9$

$s^2 = (6-9)^2 \times 0.03 + (7-9)^2 \times 0.1 + (8-9)^2 \times 0.2 + (9-9)^2 \times 0.35$

$+(10-9)^2 \times 0.19 + (11-9)^2 \times 0.09 + (12-9)^2 \times 0.04 = 1.78$

$(2)(i)$ $\mu = 9$ $\sigma^2 = 1.78$ $\therefore X \sim N(9, 1.78)$ $\sigma = \sqrt{1.78} = \frac{\sqrt{178}}{10} \approx \frac{4}{3}$

$P(X \leqslant 10) = P\left(Y \leqslant \frac{10-9}{\frac{4}{3}}\right) = P(Y \leqslant 0.75) = 0.7734$

(ii) (i) $P(X > 10) = 1 - P(X \leqslant 10) = 0.2266$

$Z \sim B(20, 0.2266)$

$P(Z \geqslant 2) = 1 - P(Z=0) - P(Z=1) = 1 - 0.7734^{20} - C_{20}^{1} \times 0.2266 \times 0.7734^{19}$

$= 1 - (0.7734 + 20 \times 0.2266) \times 0.0076 \approx 0.9597$

$\therefore Z$ $E(Z) = 20 \times 0.2266 = 4.532$

$(1)\overline{m} = 65 \times 0.05 + 75 \times 0.1 + 85 \times 0.2 + 95 \times 0.25 + 105 \times 0.2 + 115 \times 0.15 + 125 \times 0.05 = 96$

(2) $0.20 + 0.15 + 0.05 = 0.4$

$\therefore X \sim B(3, 0.4)$

$\therefore P(X = k) = C_3^k \times 0.4^k \times 0.6^{3-k} (k = 0, 1, 2, 3)$

$\therefore$

X				
$P(X)$	0.216	0.432	0.288	0.064

$\therefore E(X) = 0.432 + 0.288 \times 2 + 0.064 \times 3 = 1.2$

(3) $\hat{y} = 0.0369 + 0.0035\sqrt{x}$ r_1, r_2

$r_1 = 1 - \frac{0.000591}{0.00605}, r_2 = 1 - \frac{0.000164}{0.00605}, \therefore r_1 < r_2$

$x = 15$

$\hat{y} = 0.0554 + 0.0396\ln 15 = 0.0554 + 0.0396\ln 15 \approx 1.03$ /

$(1)\because g(x)$ $\therefore g(-x)=g(x)$

$(-x)^2+ax+6=x^2-ax+6$ $ax=0$ $x\in R$ $\therefore a=0$

$\therefore g(x)=x^2+6$

$\therefore g(x)$ $x=0$

$\therefore$ $g(x)$ $(0,+\infty)$

$(2)\because g(x)=x^2-ax+6<0$ $\{x|2<x<3\}$

$\therefore 2$ $x^2-ax+6=0$

$a=2+3=5$

$\therefore g(x)=x^2-5x+6$

$\therefore \frac{g(x)}{x-1}=\frac{x^2-5x+6}{x-1}=(x-1)+\frac{2}{x-1}-3$

$\because x>1$ $\therefore x-1>0$

$(x-1)+\frac{2}{x-1}\geqslant 2\sqrt{2}$ $\begin{cases} x-1=\frac{2}{x-1} \\ x-1>0 \end{cases}$ $x=\sqrt{2}+1$ $=$

$\therefore \frac{g(x)}{x-1}\geqslant 2\sqrt{2}-3$ $\frac{g(x)}{x-1}$ $2\sqrt{2}-3$ $x=\sqrt{2}+1$ $=$

$(3)\because x\geqslant 1$ $f(x)=\log_{\frac{1}{2}}(x^2+1)\leqslant -1$. $x=1$ $f(x)$ $f(1)=-1$

$\because$ $x_1\in[1,+\infty),x_2\in[-2,4]$ $f(x_1)\leqslant g(x_2)$

$\therefore$ $[-2,4]$ $g(x)\geqslant f(x)_{\max}$ $x^2-ax+6\geqslant -1$ $x\in[-2,4]$

$F(x)=x^2-ax+7(-2\leqslant x\leqslant 4)$

① $a\leqslant -4$ $F(x)_{min}=F(-2)=2a+11$

$2a+11\geqslant 0\Rightarrow a\geqslant -\frac{11}{2}$

$\therefore -\frac{11}{2}\leqslant a\leqslant -4;$

$-4<a<8$ $F(x)_{min}=F(\frac{a}{2})=-\frac{a^2}{4}+7$

$-\frac{a^2}{4}+7\geqslant 0\Rightarrow -2\sqrt{7}\leqslant a\leqslant 2\sqrt{7}$

$\therefore -4<a\leqslant 2\sqrt{7}$

③ $a\geqslant 8$ $F(x)_{min}=F(4)=-4a+23$

$-4a+23\geqslant 0\Rightarrow a\leqslant \frac{23}{4}$

$\therefore a\in\varnothing$

a $-\frac{11}{2}\leqslant a\leqslant 2\sqrt{7}$

(1) $\because f(x)=a-\frac{1}{2^x+1}$ R

$\therefore f(0)=0$ $a=\frac{1}{2}$

$f(x)=\frac{1}{2}-\frac{1}{2^x+1}=\frac{1}{2}\cdot\frac{2^x-1}{2^x+1}$

$f(-x)=-f(x)$

$\therefore a=\frac{1}{2}$

$(2) f(x)$ R

$\because 2^x+1>1$ $\therefore 0<\frac{1}{2^x+1}<1$

$-\frac{1}{2}<\frac{1}{2}-\frac{1}{2^x+1}<\frac{1}{2}$

$\therefore f(x)\in(-\frac{1}{2},\frac{1}{2})$

(3)

$f[(log_2x)^2-b]=f(log_2x)$ $[\frac{1}{2},2]$

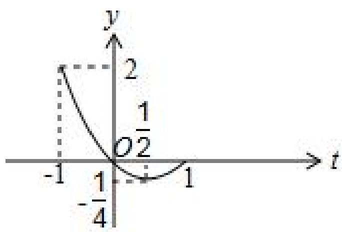
(2) $f(x)$ R

$\therefore (log_2x)^2-b=log_2x$ $b=(log_2x)^2-log_2x$ $[\frac{1}{2},2]$

$\log_2 x=t$ $\because x\in[\frac{1}{2},2]$ $\therefore t\in[-1,1]$

$b=t^2-t$ $t\in[-1,1]$

$y=t^2-t$



$b\in(-\frac{1}{4},0]$

$y=t^2-t$ $y=b$

$b=t^2-t$

$\therefore b$ $(-\frac{1}{4},0]$