$60-3k>7k+7$ $\quad 16k \cdot \frac{20!}{(20-k-1)!(k+1)!}$

14. $P(X=k)=C_{20}^{k}\cdot 0.3^{k}\cdot 0.7^{20-k}$

$$\frac{P(X=k+1)}{P(X=k)}=\frac{C_{20}^{k+1}\cdot 0.3^{k+1}\cdot 0.7^{19-k}}{C_{20}^{k}\cdot 0.3^{k}\cdot 0.7^{20-k}}=\frac{C_{20}^{k+1}\cdot 0.3}{C_{20}^{k}\cdot 0.7}=\frac{(20-k)!\cdot k!\cdot 3}{(20-k-1)!(k+1)!\cdot 7}$$

$$=\frac{3(20-k)}{7(k+1)}$$

$\frac{3(20-k)}{7(k+1)}>1$, $k<5.3$. $P(X=5)=0.18$. $P(X=6)=0.19$

$\therefore$ 最可能的k为6

15. $\lambda=1$, $P(X\geq 3)=1-P(X=0)-P(X=1)-P(X=2)\approx 0.0803$

16. $P(X\leq k)=99.6\%$, $\sum_{n=0}^{k}P(X=n)=\sum_{0}^{k}\frac{3^n}{n!}e^{-3}=99.6\%$

$k=8$

18. (1) $P(X>15)=1-P(X\leq 15)=0.0487$

(2) $P(X=0)=e^{-\lambda}=\frac{1}{2}$, $\lambda=\ln 2$

$P(X\geq 2)=1-P(X=0)-P(X=1)=0.5-P(X=1)=0.1534$

19. $P(X=k)=\frac{\lambda^k}{k!}e^{-\lambda}$, $\frac{P(X=k+1)}{P(X=k)}=\frac{\lambda}{k+1}<1$, $k>\lambda-1$

$\frac{\lambda}{k+1}>1$, $k<\lambda-1$ 若 $\lambda-1$为自然数. 则 $k=\lambda-1$和λ时最大

否则 k在$[\lambda-1]+1$时最大

23. $F(0)=F(0-0)$, $b=a$, $F(2)=F(2-0)$, $1=2a+b$

$\therefore a=b=\frac{1}{3}$

tan arcsin 1 Σ

25. $\int_{-\infty}^{+\infty}[F(x+b)-F(x+a)]dx$

$=\int_{-\infty}^{+\infty}[\int_{x+a}^{x+b}f(t)dt]dx=\int_{x+a}^{x+b}[\int_{-\infty}^{+\infty}f(t)dt]dx=\int_{x+a}^{x+b}dx$

$=b-a$

$\frac{1}{2}$ $\frac{\pi}{6}$ $\frac{\pi}{3}\cdot\frac{2}{\pi}$

arcsinx 2 arcsin

27. (1) $\int_{-1}^{1}f(x)dx=\int_{-1}^{1}\frac{a}{\sqrt{1-x^2}}dx=2a\int_0^1\frac{1}{\sqrt{1-x^2}}dx=\pi a=1$

$a=\frac{1}{\pi}$

(2) $P(|X|<\frac{1}{2})=\int_{-\frac{1}{2}}^{\frac{1}{2}}f(x)dx=\int_0^{\frac{1}{2}}\frac{1}{\sqrt{1-x^2}}dx\cdot\frac{2}{\pi}=\frac{1}{3}$

(3) $F(x)=\int_{-\infty}^{x}f(x)dx$

① 当 $x\le-1$ 时，$F(x)=0$

② 当 $x\in(-1,1]$ 时，$F(x)=\int_{-1}^{x}\frac{1}{\sqrt{1-x^2}}dx\cdot\frac{1}{\pi}=\frac{1}{\pi}\arcsin x+\frac{1}{2}$

③ 当 $x>1$ 时，$F(x)=1$

$0.5\,(-2e^{-0.5x}|_{10}^{+\infty}$ e^{-5} $-50e^{-\frac{1}{50}x}|_0^2$

32. (1) $P(X\le2)=\int_0^2\frac{1}{50}e^{-\frac{1}{50}x}dx=\frac{1}{50}\times(-50e^{-\frac{1}{25}}+50)$

$=1-e^{-\frac{1}{25}}=0.03921$

(2) $P(X\ge10)=\int_{10}^{+\infty}\frac{1}{50}e^{-\frac{1}{50}x}dx=\frac{1}{50}(0+50\cdot e^{-\frac{1}{5}})=0.81873$

(3) $P(X\ge20\mid X\ge10)=P(X\ge10)=\int_{10}^{+\infty}\frac{1}{50}e^{-\frac{1}{50}x}dx=0.81873$

33. 对于每个人，$P(T>10)=\int_{10}^{+\infty}0.5e^{-0.5x}dx=0.00674$

$\therefore P(X\ge2)=1-P(X=0)-P(X=1)=1-(1-0.00674)^{282}-C_{282}^{1}\cdot0.00674\cdot$

$(1-0.00674)^{281}=0.5673$