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PZZ3, 29

设X为取值 1,2,3的随机变量,分板炒杯.

P(X=1)=主, P(X=2)=士, P(X=3)=士, P(X=3)=士, P(X=3)=士. *X的 生国函数并且得到前三个矩区(X), E[X], E[X], E[X]. 解: 矩型函数M(s)=E[esx]===05+=035

 $E(x) = \frac{dM(s)}{ds} \Big|_{s=0} = (\frac{1}{2}e^{s} + \frac{1}{2}e^{2s} + \frac{3}{4}e^{3s})\Big|_{s=0} = \frac{1}{2} + \frac{1}{2} + \frac{3}{4} = \frac{7}{4}.$

 $E(X^{2}) = \frac{d^{2}M(s)}{ds^{2}}\Big|_{s=0} = \left(\frac{1}{2}e^{s} + e^{2s} + \frac{9}{4}e^{3s}\right)\Big|_{s=0} = \frac{1}{2}t+1+\frac{9}{4}=\frac{15}{4}$

 $E(X^{3}) = \frac{d^{3}M(s)}{ds^{3}} \Big|_{s=6} = \Big[\frac{1}{2}e^{5} + 2e^{2s} + \frac{27}{4}e^{3s}\Big)\Big|_{s=0-\frac{1}{2}} + 2t_{4}^{27} = \frac{37}{4}$