运筹学教程罚函数作业

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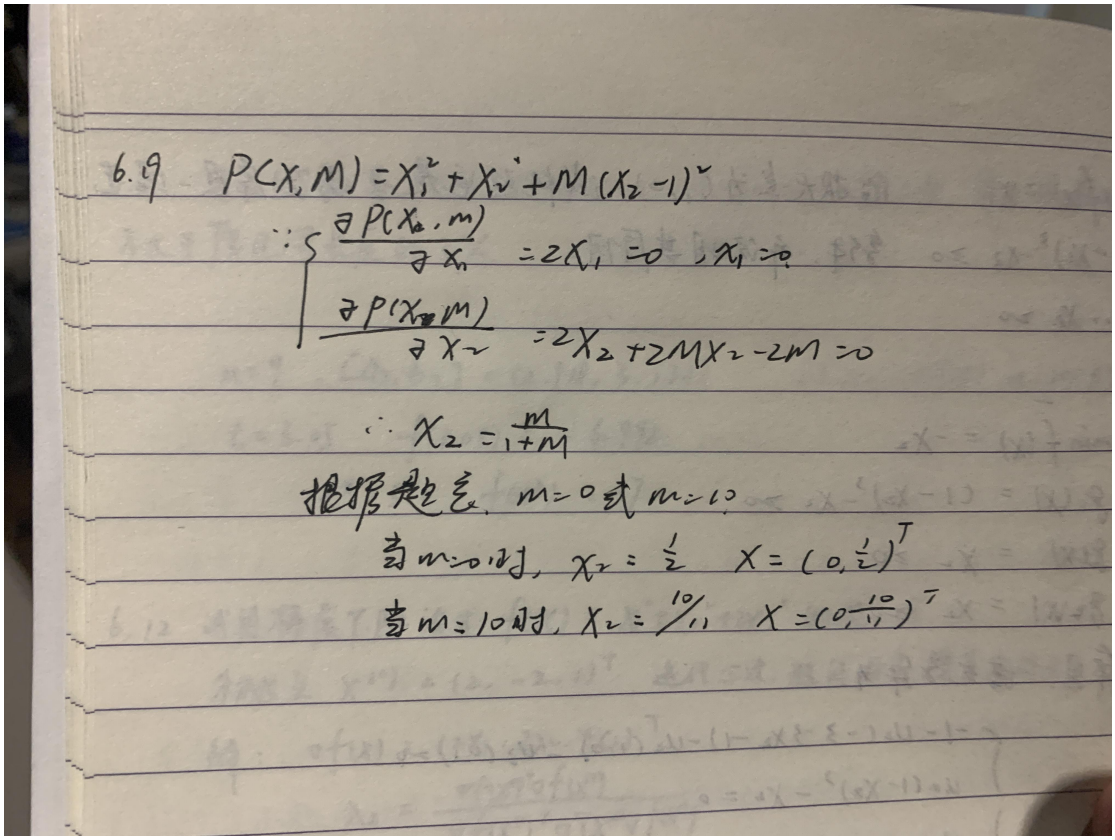
6.19



6.9 $P(X,M)=X_1^2+X_2^2+M(X_2-1)^2$

$$\because \begin{cases} \frac{\partial P(X_2,M)}{\partial X_1}=2X_1=0, X_1=0 \\ \frac{\partial P(X_2,M)}{\partial X_2}=2X_2+2MX_2-2M=0 \end{cases}$$

$\therefore X_2=\frac{M}{1+M}$

根据题意，$M=0$或$M=10$

当$M=0$时，$X_2=\frac{1}{2}$ $X=(0,\frac{1}{2})^T$

当$M=10$时，$X_2=\frac{10}{11}$ $X=(0,\frac{10}{11})^T$