Travaux pratiques : devoir 2

3.2.3

(a) I.

- $P(X=1)=\frac{1}{10}$
- $P(X=2)=\frac{9}{10}\frac{1}{10}=\frac{9}{100}$
- $P(X=3)=\frac{9}{10}\frac{9}{10}\frac{1}{10}=\frac{9^2}{10^3}$
- $P(X=n)=\frac{9^{(n-1)}}{10^n}$

(a) II.

- $P(X=1)=\frac{1}{10}$
- $P(X=2)=\frac{9}{10}\frac{1}{9}=\frac{1}{10}$
- $P(X=3)=\frac{9}{10}\frac{8}{9}\frac{1}{8}=\frac{1}{10}$
- $P(X=10)=\frac{9}{10}\frac{8}{9}\cdots\frac{2}{3}\frac{1}{2}\frac{1}{1}=\frac{1}{10}$

(b) $P(X<6|X>3)=\frac{P(3<X<6)}{P(X>3)}=\frac{P(X=4)+P(X=5)}{1-P(X\leq 3)}$

I. $P(X<6|X>3)=\frac{\frac{9^3}{10^4}+\frac{9^4}{10^5}}{1-(\frac{1}{10}+\frac{9}{100}+\frac{9^2}{10^3})}=0.19$

II. $P(X<6|X>3)=\frac{0.1+0.1}{1-0.3}=0.286$