

Solution for exercise 2.4.7 in Pitman

Question a) From page 90 top we know that m is the largest integer less than equal to $(n + 1) \cdot p = 2.6$, thus $m = 2$.

Question b)

$$\binom{25}{2} 0.1^2 0.9^{23} = 0.2659$$

Question c)

$$\Phi\left(\frac{2 + \frac{1}{2} - 2.5}{\sqrt{25 \cdot 0.09}}\right) - \Phi\left(\frac{1 + \frac{1}{2} - 2.5}{\sqrt{25 \cdot 0.09}}\right) = \Phi(0) - \Phi(-0.667) = 0.2475$$

Question d)

$$\frac{2.5^2}{2!} \cdot e^{-2.5} = 0.2566$$

Question e) Normal m is now 250

$$\Phi\left(\frac{250 + \frac{1}{2} - 250}{\sqrt{2500 \cdot 0.09}}\right) - \Phi\left(\frac{250 - \frac{1}{2} - 250}{\sqrt{2500 \cdot 0.09}}\right) = \Phi\left(\frac{1}{30}\right) - \Phi\left(-\frac{1}{30}\right) = 0.0266$$

Question f) Poisson - as above 0.2566.