Math 341 Homework 5

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Problem 2

a) Can be modeled as the Binomial Distribution $x \sim b(8, 0.001)$ where $n = 8,\ p = 0.001$

b) No, the cars differ, track conditions may be different, different drivers Additionally, one race being faster may motivate a driver and impact them mentally to do better/worse

c) No, the poisson distribution requires n to be large, p to be small, and that np to be fixed. In this case, n is very small.

d) $Y \approx X$ in distribution.

$$Y \sim Poisson(\lambda).$$
$$\frac{e^{-Y}Y^x}{x!}$$

e) $P(Y = 0),\ P(X = 0)$

f) Q1, Q2 Referencing d for one session, doubling these sessions keeps the poisson distribution. Let W be the # of drivers.

$$W \sim Poisson(2\lambda)$$
$$f$$

Problem 3

a) Assume $p = 0.1,\ n = 24$. Poisson with parameter $np = 2.4$