

19. [3.F01.30] The claims department of an insurance company receives envelopes with claims for insurance coverage at a Poisson rate of $\lambda = 50$ envelopes per week. For any period of time, the number of envelopes and the numbers of claims in the envelopes are independent. The numbers of claims in the envelopes have the following distribution:

Number of Claims	Probability
1	0.20
2	0.25
3	0.40
4	0.15

$$E(X) = 2.5$$

$$E(X^2) = 7.2$$

Using the normal approximation, calculate the 90th percentile of the number of claims received in 13 weeks.

A. 1690

B. 1710

C. 1730

D. 1750

E. 1770

$$E(S) = \lambda t E(X) = 50(13)(2.5) = 1625$$

$$\text{Var}(S) = \lambda t E(X^2) = 50(13)(7.2) = 4680$$

$$1625 + 1.282 \sqrt{4680} = 1712.70$$