2-9. The manager of a men's clothing store is concerned over the inventory of suits, which is currently 30 (all sizes). The number of suits sold from now to the end of the season is distributed as

$$p_X(x) = \frac{e^{-20}\,20^x}{x!}, \quad x = 0,1,2,\dots,$$
$$= 0, \quad\quad\quad \text{otherwise.}$$

Find the probability that he will have suits left over at the season's end.

Notational Comment $P(X=x)$ is the same as $p_X(x)$

<u>Define</u>

A = event that he will have suits left over at the season's end

We are asked to find $P(A)$

$$P(A) = P(0 \le X \le 29) = \sum_{x=0}^{29} P(X=x)$$

$$= \sum_{x=0}^{29} \frac{e^{-20}\,20^x}{x!}$$

$$\boxed{= 0.9782}$$