

16. An insurance company determines that N , the number of claims received in a week, is a random variable with $P[N = n] = \frac{1}{2^{n+1}}$, where $n \geq 0$. The company also determines that the number of claims received in a given week is independent of the number of claims received in any other week.

Determine the probability that exactly seven claims will be received during a given two-week period.

- (A) $\frac{1}{256}$
- (B) $\frac{1}{128}$
- (C) $\frac{7}{512}$
- (D) $\frac{1}{64}$
- (E) $\frac{1}{32}$