Let's call N the real number of critical issues for a codebase of L lines, A the number of auditors reviewing the code and K the number of issues they've found.

Let's assume:

- Every auditor has a chance p of missing each issue (said differently a probability $1-p$ of finding it). So, for each issue, the probability that it is found by at least one person is $(1-p^A)$.
- On the builder side, let's assume every line there is a probability q of introducing a new vulnerability. To estimate this we take $q = k/L$, that is to say, the ratio of the found issues over the total number of lines.

We have:

$$P(N = n) = \binom{n}{L} q^n (1-q)^{L-n}$$

$$P(K = k|N = n) = \binom{k}{n} (1-p^A)^k p^{A(n-k)}$$

$$\begin{aligned}
P(K = k) &= \sum_{i \geq k} P(K = k|N = i) P(N = i) \\
&= \sum_{i \geq k} \binom{k}{i} (1-p^A)^k p^{A(i-k)} P(N = i) \\
&= \sum_{i \geq k} \binom{k}{i} (1-p^A)^k p^{A(i-k)} \binom{i}{L} q^i (1-q)^{L-i}
\end{aligned}$$

So the probability that an issue was missed if we observe $K = k$ (an audit found k issues), and taking $q = \frac{K}{L}$ is:

$$\begin{aligned}
P(N > k|K = k) &= 1 - P(N = k|K = k) \\
&= 1 - \frac{P(K = k|N = k) P(N = k)}{P(K = k)} \\
&= 1 - \frac{\binom{k}{k}(1-p^A)^k \binom{k}{L} (\frac{k}{L})^k (\frac{L-k}{L})^{L-k}}{\sum_{i \geq k} \binom{k}{i} p^{A(i-k)} (1-p^A)^k \binom{i}{L} (\frac{k}{L})^i (\frac{L-k}{L})^{L-i}} \\
&= 1 - \frac{\binom{k}{L} (\frac{k}{L})^k (\frac{L-k}{L})^{L-k}}{\sum_{i \geq k} \binom{k}{i} \binom{i}{L} p^{A(i-k)} (\frac{k}{L})^i (\frac{L-k}{L})^{L-i}}
\end{aligned}$$