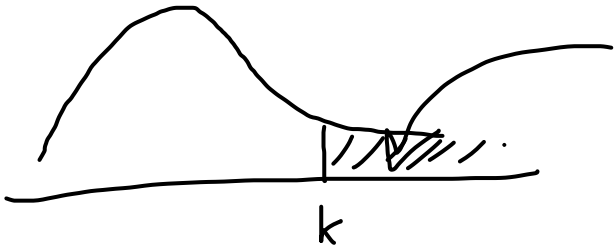
In general, $X \sim \chi^2_\nu = \text{Gamma}\left(\frac{\nu}{2}, \frac{1}{2}\right)$

$$E(X) = \frac{\alpha}{\lambda} = \frac{\nu/2}{1/2} = \nu$$

$$\text{Var}(X) = \frac{\alpha}{\lambda^2} = \frac{\nu/2}{1/4} = 2\nu$$



$P(X > k)$

Find k s.t. $P(X > k) = 0.025$, $\nu = 10$

$$k = 20.48$$