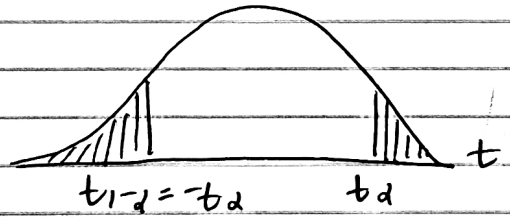
① find $\chi^2_{0.05}$ when $v = 19$
table A5 → 30.144

② find χ^2_α s.t $P(37.652 < X^2 < \chi^2_\alpha) = 0.0045$ when $v = 25$

$\underbrace{P(X^2 > 37.652)}_{0.05} - P(X^2 > \chi^2_\alpha) = 0.0045$

$\Rightarrow 0.05 - P(X^2 > \chi^2_\alpha) = 0.0045$
$\Rightarrow P(X^2 > \chi^2_\alpha) = 0.05 - 0.0045$
$\Rightarrow P(X^2 > \chi^2_\alpha) = 0.005$
$\Rightarrow 46.928$

① $v = 14$ find ~~t~~ $t_{0.975}$
$t_{0.975} = -t_{0.025}$ by symmetry



$t_{0.975} = -t_{0.025} = -2.145$ (A4)

② $P(-t_{0.025} < T < t_{0.05})$
$t_{0.05}$ leaves an area of 0.05 to the right and $-t_{0.025}$ leaves an area of 0.025 to the left, we find the area between of $1 - 0.05 - 0.025 = 0.925$

③ find K st $P(K < T < 1.761) = 0.045$

note by symmetry $t_{.05, v=14}$ is 1.761

$\Rightarrow -t_{0.05, v=14}$ is -1.761

Then $P(T < -1.761) - P(T < K) = 0.045$

$0.05 - P(T < K) = 0.045$

$P(T < K) = 0.005$

let $K = -t_\alpha$

$K = -t_{0.005, v=14}$ is -2.977