

Some Common R Commands

Command	Explanation
<code>pnorm(x)</code>	$P(x \leq Z)$ for $Z \sim \mathcal{N}(0, 1)$
<code>pt(x, n - 1)</code>	$P(x \leq T_{n-1})$ for $T_{n-1} \sim T(n - 1)$
<code>qnorm(p)</code>	Finds x such that $P(x \leq Z) = p$ for $Z \sim \mathcal{N}(0, 1)$
<code>qt(p, n - 1)</code>	Finds x such that $P(x \leq T_{n-1}) = p$ for $T_{n-1} \sim T(n - 1)$
<code>pnorm(x, lower.tail = FALSE)</code>	$P(x \geq Z)$ for $Z \sim \mathcal{N}(0, 1)$
<code>pt(x, n - 1, lower.tail = FALSE)</code>	$P(x \geq T_{n-1})$ for $T_{n-1} \sim T(n - 1)$
<code>qnorm(p, lower.tail = FALSE)</code>	Finds x such that $P(x \geq Z) = p$ for $Z \sim \mathcal{N}(0, 1)$
<code>qt(p, n - 1, lower.tail = FALSE)</code>	Finds x such that $P(x \geq T_{n-1}) = p$ for $T_{n-1} \sim T(n - 1)$

Notice that the `lower.tail = FALSE` option switches around the inequality in the probabilities. Hence it considers the upper tail instead of the lower tail, explaining its name.

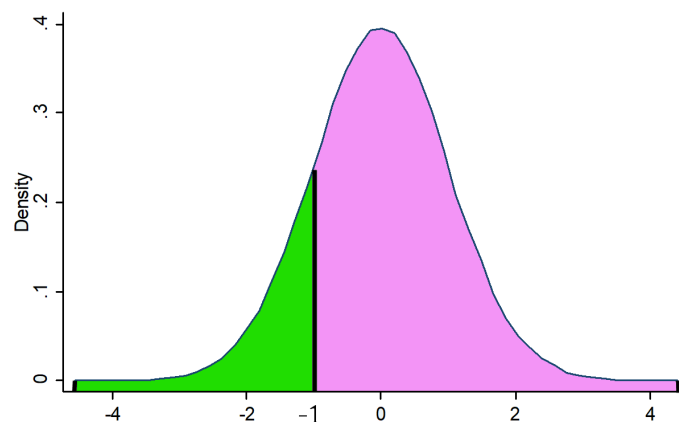


FIGURE 1: The green area is given by `pt(-1, n-1)`, and the pink area is given by `pt(-1, n-1, lower.tail = FALSE)`.

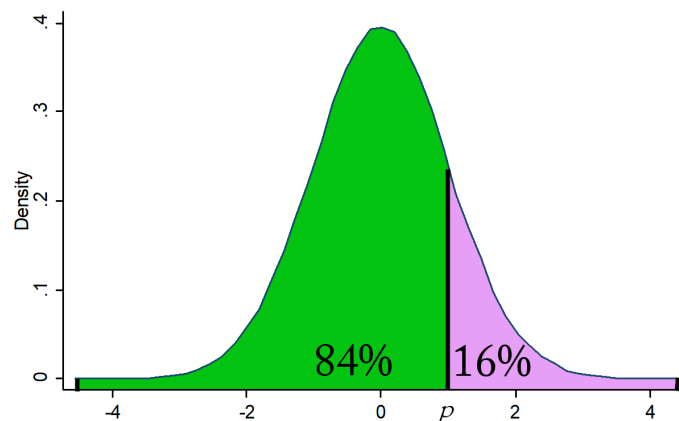


FIGURE 2: The number p is the number such that the probability of being below it is 0.84, and likewise the probability of being above it is 0.16. Apropos R commands, `qt(0.84, n-1)` and `qt(0.16, n-1, lower.tail = FALSE)`.