Lower tail or upper tail probability to calculate p-value for mean (μ) or proportion (p)?

Consider H_a

directed

Undirected: $H_a: \mu \neq \mu_0$ / $H_a: p \neq p_0$

What is direction?

$H_a: \mu > \mu_0$
$H_a: p > p_0$

$H_a: \mu < \mu_0$
$H_a: p < p_0$

Is the sample mean/proportion smaller or larger than μ_0/p_0?

Smaller!
(so negative z-score or t-score)

Larger!
(so positive z-score or t-score)

Use upper tail probability!
=1-NORM.DIST (z; 0; 1; TRUE)
=1-T.DIST(t; df; TRUE)
Upper tail probability is p-value

Use lower tail probability!
=NORM.DIST (z; 0; 1; TRUE)
=T.DIST(t; df; TRUE)
Lower tail probability is p-value

Use lower tail probability!
=NORM.DIST (z; 0; 1; TRUE)
=T.DIST(t; df; TRUE)
and double this lower tail probability to get p-value!

Use upper tail probability!
=1-NORM.DIST (z; 0; 1; TRUE)
=1-T.DIST(t; df; TRUE)
and double this upper tail probability to get p-value!