A quick guide to Hypothesis Testing

For MATH 1342

Click here to begin.

What is the Alternate Hypothesis (H_a)?

Less Than

Greater Than
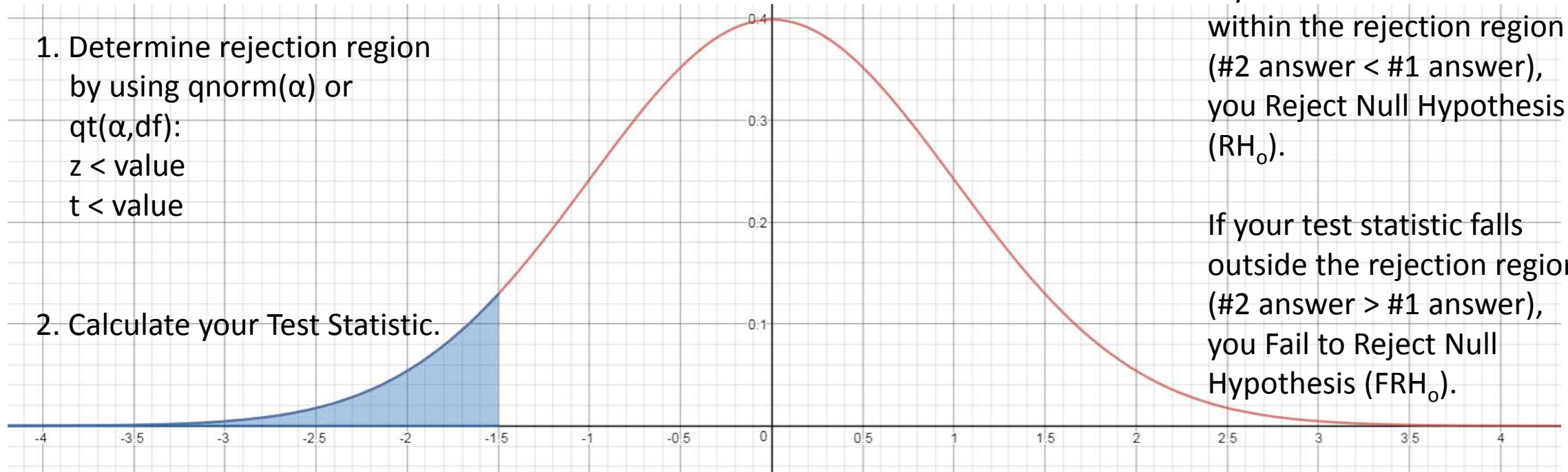
Does not equal

Is the confidence level (α) known?

Yes

No

Alternate Hypothesis: Less Than Confidence Level: Known

1. Determine rejection region by using qnorm(α) or qt(α,df):
   z < value
   t < value

2. Calculate your Test Statistic.

3. If your test statistic falls within the rejection region (#2 answer < #1 answer), you Reject Null Hypothesis (RH$_o$).

If your test statistic falls outside the rejection region (#2 answer > #1 answer), you Fail to Reject Null Hypothesis (FRH$_o$).

4. Calculate your p-value by using pnorm(#2 answer) or pt(#2 answer, df)

5. Using your p-value (#4 answer) and your confidence level (α), determine the following:
   If p < α, you Reject the Null Hypothesis (RH$_o$).
   If p > α, you Fail to Reject the Null Hypothesis (FRH$_o$).
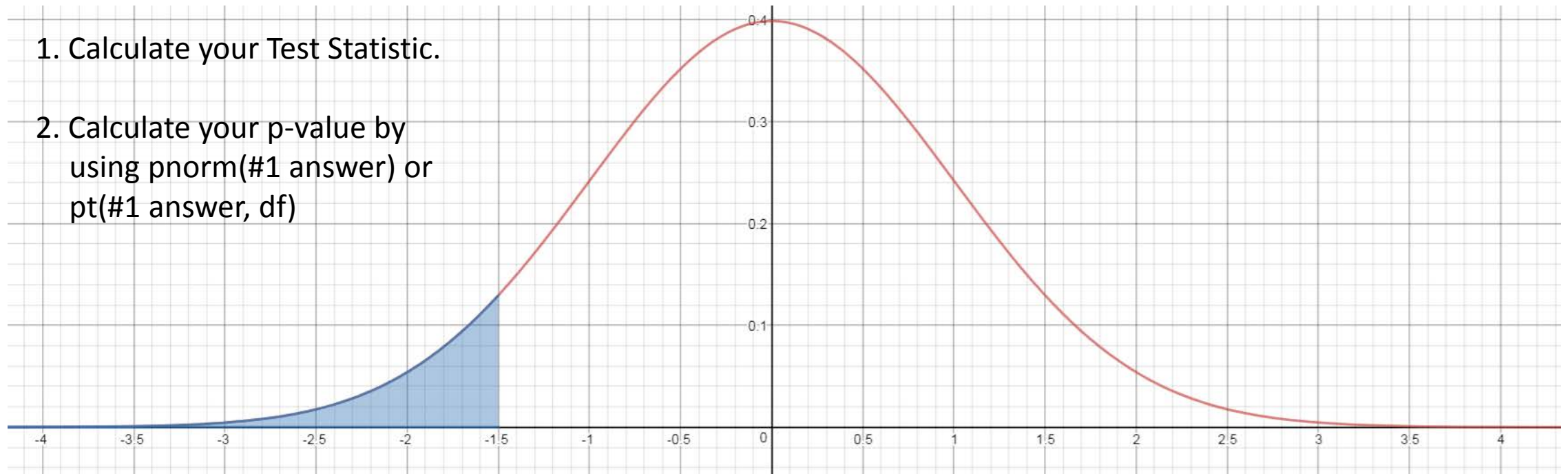
I have more hypotheses to test

I am done hypothesizing

Alternate Hypothesis: Less Than Confidence Level: Not Known

1. Calculate your Test Statistic.

2. Calculate your p-value by using pnorm(#1 answer) or pt(#1 answer, df)

3. Using your p-value (#2 answer), determine the following:
   If p < .01, you Reject the Null Hypothesis (RH$_o$) with overwhelming evidence.
   If .01 < p < .05, you Reject the Null Hypothesis (RH$_o$) with strong evidence.
   If .05 < p < .10, you Reject the Null Hypothesis (RH$_o$) with weak evidence.
   If p > .10, you Fail to Reject the Null Hypothesis (FRH$_o$).
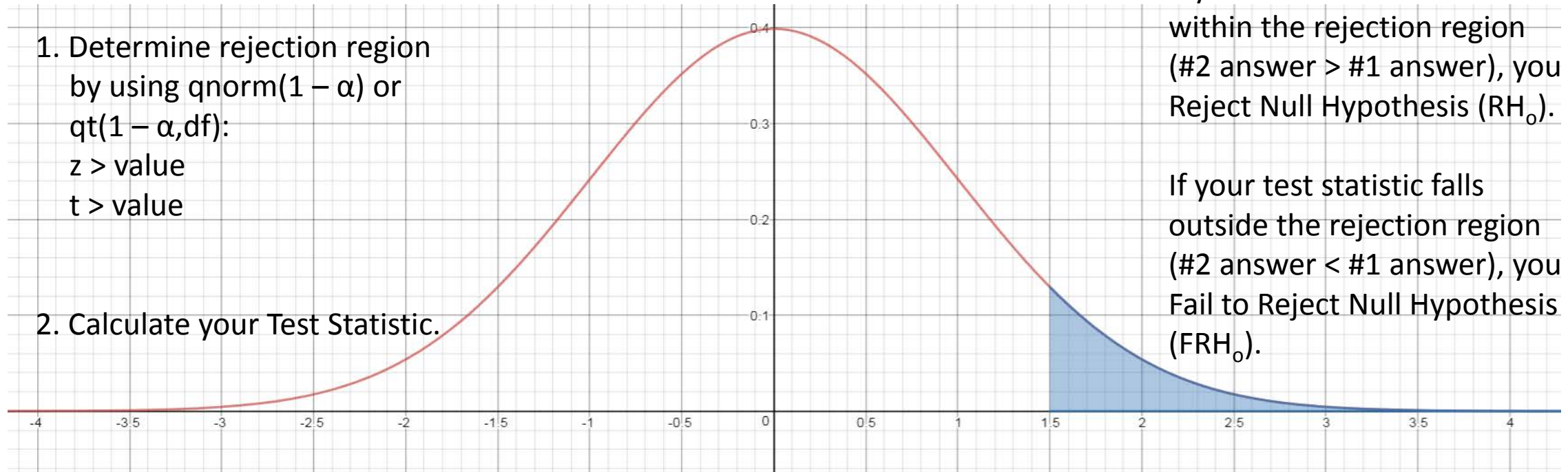
Is the confidence level (α) known?

[Yes](#)

[No](#)

Alternate Hypothesis: Greater Than Confidence Level: Known

1. Determine rejection region by using qnorm($1 - \alpha$) or qt($1 - \alpha$,df):
   z > value
   t > value

2. Calculate your Test Statistic.

3. If your test statistic falls within the rejection region (#2 answer > #1 answer), you Reject Null Hypothesis (RH_o).

If your test statistic falls outside the rejection region (#2 answer < #1 answer), you Fail to Reject Null Hypothesis (FRH_o).

4. Calculate your p-value by using $1 - $ pnorm(#2 answer) or $1 - $ pt(#2 answer, df)

5. Using your p-value (#4 answer) and your confidence level (α), determine the following:
   If $p < \alpha$, you Reject the Null Hypothesis (RH_o).
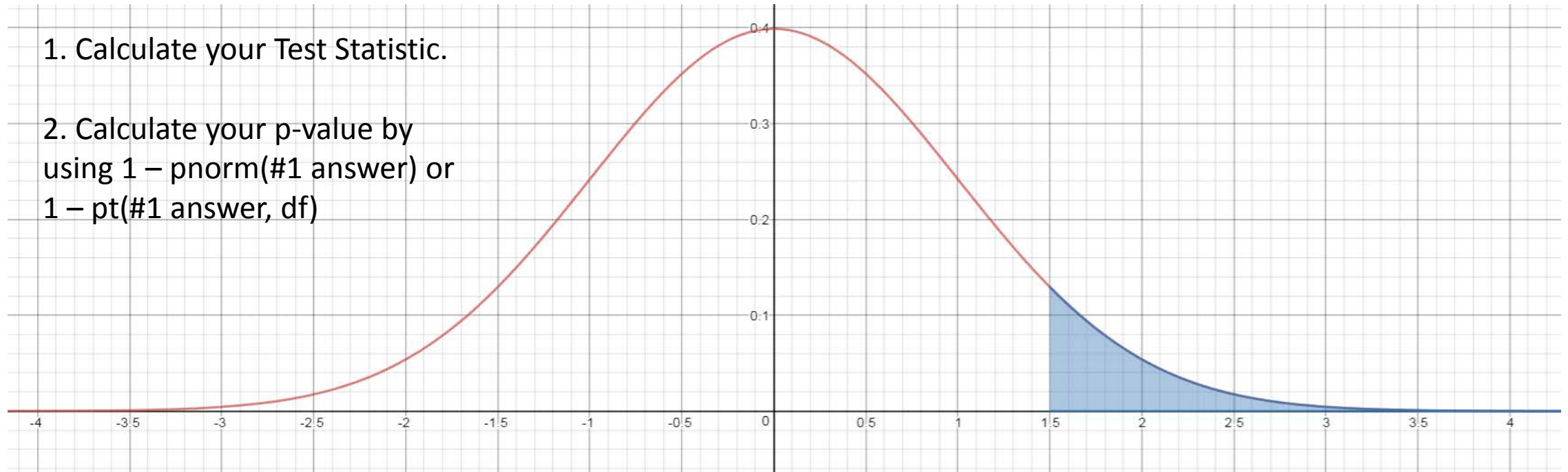   If $p > \alpha$, you Fail to Reject the Null Hypothesis (FRH_o).

Alternate Hypothesis: Greater Than
Confidence Level: Not Known

1. Calculate your Test Statistic.

2. Calculate your p-value by using $1 - pnorm(\#1\ answer)$ or $1 - pt(\#1\ answer, df)$

3. Using your p-value (#2 answer), determine the following:
    If $p < .01$, you Reject the Null Hypothesis (RH$_o$) with overwhelming evidence.
    If $.01 < p < .05$, you Reject the Null Hypothesis (RH$_o$) with strong evidence.
    If $.05 < p < .10$, you Reject the Null Hypothesis (RH$_o$) with weak evidence.
    If $p > .10$, you Fail to Reject the Null Hypothesis (FRH$_o$).

I have more hypotheses to test

I am done hypothesizing

Is the confidence level (α) known?

Yes

No

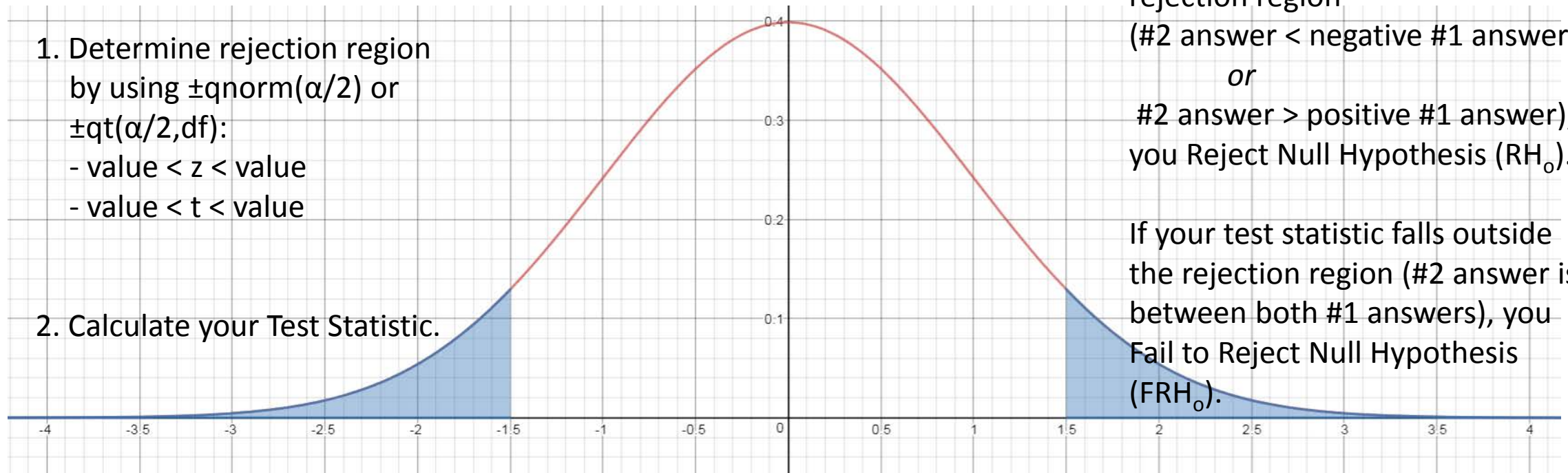# Alternate Hypothesis: Does Not Equal Confidence Level: Known

1. Determine rejection region by using ±qnorm(α/2) or ±qt(α/2,df):
   - value < z < value
   - value < t < value

2. Calculate your Test Statistic.

3. If your test statistic falls within the rejection region

(#2 answer < negative #1 answer

or

#2 answer > positive #1 answer), you Reject Null Hypothesis (RH_o).

If your test statistic falls outside the rejection region (#2 answer is between both #1 answers), you Fail to Reject Null Hypothesis (FRH_o).

4. Calculate your p-value by using 2*pnorm(*negative* #2 answer$_1$) or 2*pt(*negative* #2 answer$_1$, df)

5. Using your p-value (#4 answer) and your confidence level (α), determine the following:
   If p < α, you Reject the Null Hypothesis (RH_o).
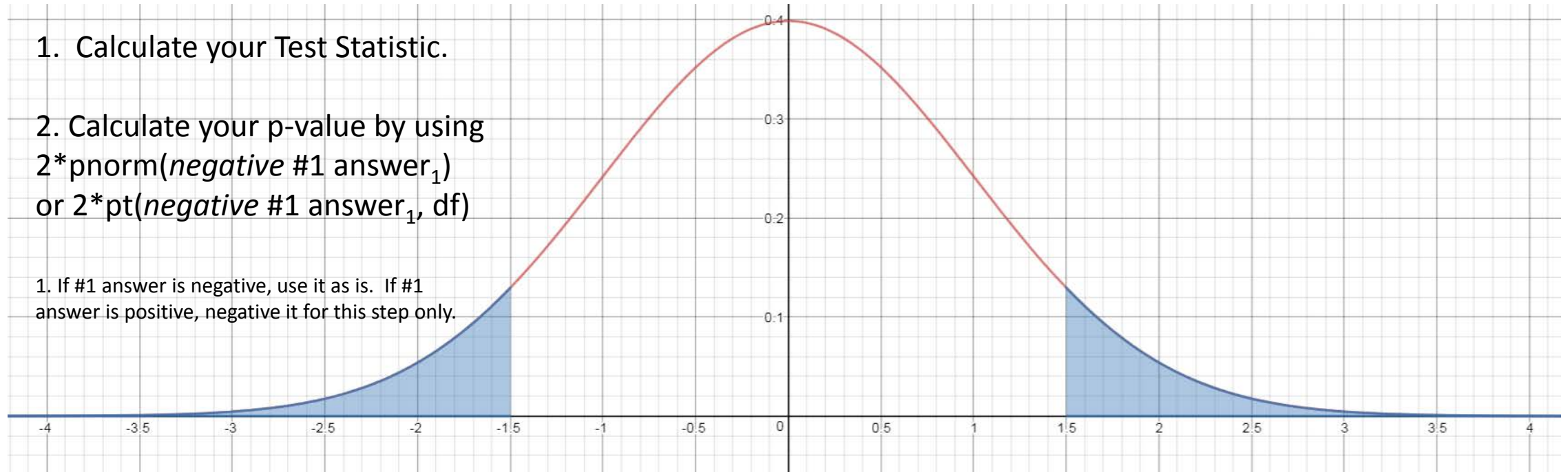   If p > α, you Fail to Reject the Null Hypothesis (FRH_o).

1. If #2 answer is negative, use it as is. If #2 answer is positive, negative it for this step only.

Alternate Hypothesis: Does Not Equal Confidence Level: Not Known

1. Calculate your Test Statistic.

2. Calculate your p-value by using
2*pnorm($negative$ #1 answer$_1$)
or 2*pt($negative$ #1 answer$_1$, df)

1. If #1 answer is negative, use it as is. If #1 answer is positive, negative it for this step only.

3. Using your p-value (#2 answer), determine the following:
   If $p < .01$, you Reject the Null Hypothesis (RH$_o$) with overwhelming evidence.
   If $.01 < p < .05$, you Reject the Null Hypothesis (RH$_o$) with strong evidence.
   If $.05 < p < .10$, you Reject the Null Hypothesis (RH$_o$) with weak evidence.
   If $p > .10$, you Fail to Reject the Null Hypothesis (FRH$_o$).

See ya!

[Click here to end.](#)