What is Abductive Reasoning?

Abductive reasoning is a reasoning process that undergird innovative behaviours and scientific discoveries.

Unlike the logical certainty of deductive reasoning, abductive reasoning involves the making of *inferences*, *speculations*, *non-sequential logical leaps*, the *forming and testing of hypotheses* that produces probabilistic conclusions.

Abductive Reasoning in 5 Steps

Step 1: A puzzling observation is made in the Science domain.

Step 2: Scientists make abductive speculations on the underlying pattern or natural mechanism.

Step 3: Empirical predictions are made, which are then tested.

Step 4: If the predictions hold, the hypothesis receives confirmation.

Step 5: If the predictions do not hold, a revised hypothesis is created and tested.

Difference between

Abductive Reasoning
1. We start with a result. This is white.
2. We follow a rule. Chalk is white.
3. Infer a property of the case. This could be chalk.

Deductive Reasoning
1. We start with a rule. Chalk is white.
2. We notice a case. This is chalk.
3. We come to a deductive conclusion. Since chalk is white, and this is chalk, then this must be white.

Inductive Reasoning
1. We begin with a case. This is chalk.
2. Investigate this case and note results. This is white.
3. Infer a rule that might not be conclusive. Chalk could be, in general, white.