George Pólya - How to Solve It - 1945

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0.1 Context

0.2 Learned in this study

0.3 Things to explore

1 Overview

2 Dictionary of heuristics

- Analogy
- Auxiliary elements: An element that we introduce in the hope that it will further the solution
- Bright idea
- Can you check the result?
- Can you derive the result differently?
- Can you use the result?
- Carrying out
- Condition
- Contradictory
- Corollary
- Could you derive something useful from the data?
- Could you restate the problem?
- Decomposition and recombining
- Definition
- Determination, hope, success
- Diagnosis
- Did you use all the data?
- Do you know a related problem?
- Draw a figure
- Examine your guess
- Figures
- Generalization
- Have you seen it before?
- Here is a problem to yours and solved before
- Heuristic
- Heuristic reasoning
- If you cannot solve the proposed problem
- Induction and mathematical induction
- Inventor's paradox
- Is it possible to satisfy the condition?
- Lemma
- Look at the unknown

- Modern heuristic
- Notation
- Pedantry and mastery
- Practical problems
- Problems to find, problems to prove
- Progress and achievement
- Puzzles
- Reductio ad absurdum and indirect proof
- Redundant
- Routine problem
- Rule of discovery
- Rule of style
- Rule of teaching
- Separate the various parts of the condition
- Setting up equations
- Signs of progress
- Specialization
- Subconscious work
- Symmetry
- Terms, old and new
- Test by dimension
- Variation of the problem
- What is the unknown?
- Working backwards

3 See also

- The heuristic of George Polya and its relation to artificial intelligence

4 References

- https://math.berkeley.edu/~gmelvin/polya.pdf
- http://furius.ca/cqfpub/doc/proofs/how-to.pdf
- http://scimath.unl.edu/conferences/documents/K-2ProblemSolvers.pdf
- http://math.ucr.edu/~res/math205B/polya.pdf
- http://web.mnstate.edu/peil/M110/Worksheet/PolyaProblemSolve.pdf