- [ ] P
- [ ] NP
- [ ] NP-Complete
  - [ ] What algorithms do the above fall into?
- [ ] Decision Problems
- [ ] Halting Problem

11.3

-Can a given problem be solved in polynomial time?

OPolynomial time iff worst case belongs to $O(p(n))$

- [ ] Tractable - Solved in polynomial time
- [ ] Intractable - not solved in polynomial time

O Computational complexity: Seeks to classify problems according to their inherent difficulty.

OP only problems: decision problems only.

↳ Polynomial time.

↳ Polynomial

↳ Deterministic problems

onot every decision problem.

→ undecideable → cannot be solved by any algorithms

→ decideable → can be solved.

OHalting problem

Turing in 1936.[1] The problem in question is called the ***halting problem***: given a computer program and an input to it, determine whether the program will halt on that input or continue working indefinitely on it.

0 NP → Non deterministic polynomial
↳ decision problems non deterministic.

0 NP complete → a problem in NP as difficult as any other problem in NP

DEFINITION 6 A decision problem D is said to be ***NP-complete*** if:

1. it belongs to class NP
2. every problem in NP is polynomially reducible to D