

Intractable Problems

The Classes P and NP

Mohamed M. El Wakil
mohamed@elwakil.net

Agenda

1. What is a problem?
2. Decidable or not?
3. The P class
4. The NP Class
5. The NP-Complete class

What is a problem?

- A **problem** is a question to be answered.
 - What is the value of X/Y ?
- A problem usually has **parameters**.
 - X , and Y
- A **decision problem**, is a *version* of the problem with only two possible answers: Yes or No!
 - Given two numbers X , and Y , does Y evenly divide X ?
- An **instance**: a specific problem instance
 - Does 3 evenly divide 6?