

# Matematisk modellering og numeriske metoder

## Answers to exercises for Lecture 1

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### Exercise 1

3., 4., 5., and 6. are ODE's. 3. and 6. are of order 1, 4. is of order 2, and 5. is of order 6. 3. is implicit, 6. is explicit.

### Exercise 2

$$f(x, y) = 4x^3y^2.$$

### Exercise 3

$$c = k + 1 \text{ (both cases).}$$

### Exercise 4

1.  $y(x) = \frac{1}{\pi} \cos(2\pi x) + k$

2.  $y(x) = ke^x$

### Exercise 5

$$y'' = g.$$

### Exercise 6

Look at Eksempel 1.1.1.4 in Eksempler.pdf.

### Exercise 7

~ 69.499%

## Exercise 8

Look at Eksempel 1.1.1.5 in Eksempler.pdf.